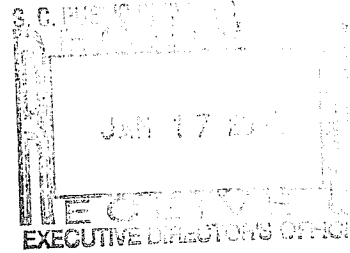
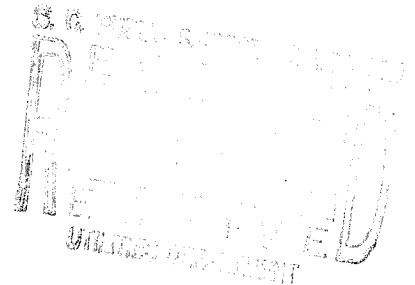


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BEFORE THE
PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA
DOCKET NO. 2000-0210-W/S

PREPARED DIRECT TESTIMONY
OF
PAULINE M. AHERN, VICE PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES



ON BEHALF OF
UNITED UTILITY COMPANIES, INC.

CONCERNING
RATE OF RETURN

JANUARY 2002

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1 I. INTRODUCTION

2 Q. Please state your name, occupation and business address.

3
4 A. My name is Pauline M. Ahern and I am a Vice President of AUS Consultants -
5 Utility Services. My business address is 155 Gaither Drive, P.O. Box 1050,
6 Moorestown, New Jersey 08057.

7
8 Q. Please summarize your educational background and professional experience.

9
10 A. I am a graduate of Clark University, Worcester, MA, where I received a Bachelor
11 of Arts degree with honors in Economics in 1973. In 1991, I received a Master of
12 Business Administration with high honors from Rutgers University.

13 In June 1988, I joined AUS Consultants - Utility Services as a Financial
14 Analyst and am now a Vice President. I am responsible for the preparation of all
15 fair rate of return and capital structure exhibits for the principals of AUS
16 Consultants - Utility Services, including myself. I am also responsible for or assist
17 in the preparation of interrogatory responses; preparation of interrogatories
18 directed to opposition witnesses, the preparation of proposed cross-examination
19 questions for and testimony in rebuttal to those witnesses, as well as for assisting
20 clients' attorneys in the post-hearing process. I have offered expert testimony on
21 behalf of investor-owned utilities before thirteen state regulatory commissions.
22 The details of these appearances, as well as details of my educational
23 background, are shown in Appendix A supplementing this testimony.

24 I am also the Publisher of C. A. Turner Utility Reports, responsible for the
25 production, publication, distribution and marketing of these reports. C. A. Turner
26 Utility Reports provides financial data and related ratios covering approximately
27 150 public utility companies on a monthly, quarterly, and annual basis including

1 electric, combination gas and electric, gas distribution, gas transmission,
2 telephone, water and international utilities to about 1,000 subscribers, which
3 include utilities, state utility commissions, federal agencies, individuals, brokerage
4 firms, attorneys and public and collegiate libraries.

5 I also calculate and maintain the A.G.A. Index under contract with the
6 American Gas Association (A.G.A.). The A.G.A. Index is a market capitalization
7 weighted index of the common stocks of about 75 corporate members of the
8 A.G.A.

9 I have co-authored an article with Frank J. Hanley, President, AUS
10 Consultants - Utility Services entitled "Comparable Earnings: New Life for an Old
11 Precept" which was published in the American Gas Association's Financial
12 Quarterly Review, Summer 1994. I also assisted in the preparation of an article
13 authored by Frank J. Hanley and A. Gerald Harris entitled "Does Diversification
14 Increase the Cost of Equity Capital?" published in the July 15, 1991 issue of
15 Public Utilities Fortnightly.

16 I am a member of the Society of Utility and Regulatory Financial Analysts,
17 formerly the National Society of Rate of Return Analysts. In 1992, I was awarded
18 the professional designation "Certified Rate of Return Analyst" (CRRRA) by the
19 National Society of Rate of Return Analysts. This designation is based upon
20 education, experience and the successful completion of a comprehensive written
21 examination.

22 I am an associate member of the National Association of Water Companies
23 and a member of the Energy Association of Pennsylvania, formerly the
24 Pennsylvania Gas Association.

1 Q. What is the purpose of your testimony?

2
3 A. The purpose is to provide testimony on behalf of United Utility Companies, Inc.
4 (United or the Company) in the form of a study of the fair rate of return, including
5 common equity cost rate, senior capital cost rate and capital structure, which it
6 should be afforded the opportunity to earn on its jurisdictional water and sewer
7 rate bases.

8
9 Q. What is your recommended overall fair rate of return range?

10
11 A. I recommend that the Public Service Commission of South Carolina (PSCSC or
12 the Commission) authorize the Company the opportunity to earn an overall rate of
13 return in the range of 10.31% to 10.56% based upon the consolidated capital
14 structure at December 31, 2000 of Utilities, Inc., the parent of United, which
15 consisted of 50.08% debt and 49.92% common equity at a debt cost rate of 8.62%
16 and my recommended common equity cost rate range of 12.00% to 12.50%.

17
18 Q. Have you prepared an exhibit which supports your overall recommended fair rate
19 of return?

20
21 A. Yes, I have. It has been marked for identification as Exhibit No. __ (PMA-1) and
22 consists of 14 schedules.

23
24
25 II. SUMMARY

26 Q. Please summarize the overall cost of capital and fair rate of return.

1 A. The overall cost of capital range of 10.31% to 10.56% is based upon the
2 consolidated capital structure and related ratios and fixed capital cost rate at
3 December 31, 2000 of Utilities, Inc. which are summarized on Schedule 1, page 1
4 of Exhibit No. ____ (PMA-1). The basis of the 12.00% to 12.50% range of common
5 equity cost rate recommendation is summarized on Schedule 1, page 2 of Exhibit
6 No. ____ (PMA-1)

7 The overall cost of capital is summarized in Table 1 below:

8
9
10 Table 1

	<u>Capital Structure Ratios</u>	<u>Cost Rate</u>	<u>Weighted Return</u>
Debt	50.08%	8.62%	4.32%
Common equity	<u>49.92</u>	12.00% to 12.50	<u>5.99% - 6.24%</u>
Total	<u>100.00%</u>		<u>10.31%-10.56%</u>

20 As explained in more detail below, my analysis reflects current capital market
21 conditions and results from the application of four well-tested market-based cost
22 of common equity models, the Discounted Cash Flow (DCF) approach, the Risk
23 Premium Model (RPM), the Capital Asset Pricing Model (CAPM), and the
24 Comparable Earnings Model (CEM).

25
26 Q. Please summarize your recommended common equity cost rate range of 12.00%
27 to 12.50%.

28
29 A. I assessed the market-based cost rates of similar risk companies, i.e., proxy
30 groups, for insight into a recommended common equity cost rate applicable to the
31 Company and suitable for cost of capital purposes. Because the Company's
32 common stock is not publicly traded, market-based common equity cost rates

1 cannot be determined directly for the Company. Consequently, it is appropriate to
2 look to a proxy group or groups of similar risk companies whose common stocks
3 are actively traded for insight into an appropriate common equity cost rate
4 applicable to the Company. Using other utilities of comparable risk as proxies is
5 consistent with the principles of fair rate of return established in the Hope¹ and
6 Bluefield² cases and adds reliability to the informed expert judgment used in
7 arriving at a recommendation of the common equity cost rate range. Therefore, I
8 have evaluated the market data of two proxy groups of water companies in
9 arriving at my recommended common equity cost rate range. The bases of
10 selection are described below. These groups, which I believe are similar to
11 United, consist of nine and four water companies, respectively.

12 As previously stated, in formulating my recommended common equity cost
13 rate range of 12.00% to 12.50%, I reviewed the results of the application of four
14 different cost of common equity models, namely, the DCF, RPM, the CAPM, and
15 CEM for the proxy group and then adjusted them upward to reflect United's
16 greater risk (vis-à-vis the proxy groups) which will be discussed subsequently. I
17 employ all four cost of common equity models as primary tools in arriving at my
18 recommended common equity cost rate range because no single model is so
19 inherently precise that it can be relied upon solely, to the exclusion of other
20 theoretically sound models. All four models are based upon the Efficient Market
21 Hypothesis (EMH), and therefore, have application problems associated with
22 them. The EMH, as will be discussed below, requires the assumption that
23 investors rely upon multiple cost of common equity models. Moreover, the
24 prudence of using multiple cost of common equity models is supported in the
25 financial literature. Therefore, none should be relied upon exclusively to estimate

¹ Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

² Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

1 investors' required rate of return on common equity.

2 In a market environment where market value deviates significantly from
3 book value (lower or higher), sole reliance on the DCF model is problematic for a
4 regulated utility because its application results in an overstatement or
5 understatement, respectively, of investors' required rate of return. Investors
6 expect to achieve their required rate of return based upon dividends received and
7 appreciation in market price. My testimony shows that market prices are
8 significantly influenced by factors other than earnings per share (EPS) and
9 dividends per share (DPS). Thus, because it is necessary to use accounting
10 proxies for growth in the DCF model, such as EPS, DPS, or their derivative,
11 internal growth, only a portion of the full growth (price appreciation) expected by
12 investors is reflected in the "g" component of the model. I will demonstrate
13 hypothetically on Schedule 7 of Exhibit No. __ (PMA-1) how the application of a
14 market-based DCF cost rate to an original cost rate base, based upon a book
15 value substantially lower than market value, deprives a utility of a reasonable
16 opportunity to experience the rate of growth expected by investors because the
17 growth estimate used in the application of the DCF model is based upon EPS or
18 some derivative thereof. Such growth proxies do not reflect the full extent of
19 market price growth expected by investors. Market prices reflect other factors
20 affecting growth not accounted for in the standard regulatory version of the DCF
21 model such as an increase in the market value per share due to expected
22 increases in price/earnings multiples and less obvious factors included in the long-
23 range goals of investors. For these reasons, sole reliance on the DCF model
24 should be avoided. In fact, state commissions in Iowa, Indiana, Hawaii and
25 Pennsylvania as discussed in detail below, which have previously relied primarily
26 upon the DCF, have explicitly recognized this tendency of the DCF model to
27 understate the common equity cost rate when, as now, market prices significantly

1 exceed book values.

2 As stated earlier, I rely upon a number of widely-used cost of common
3 equity models as primary tools in reaching my recommendation because each
4 provides useful data. None is theoretically superior to the others or so precise as
5 to justify sole reliance upon it.

6 The results derived from each are as follows:
7

8 Table 2

	Proxy Group of Nine C.A. Turner Water Cos.	Proxy Group of Four Value Line Water Cos.
Discounted Cash Flow Model	8.8%	9.4%
Risk Premium Model	12.8	12.7
Capital Asset Pricing Model	11.8	11.8
Comparable Earnings Model	<u>12.5</u>	<u>12.5</u>
Average	11.5	11.6
Business Risk Adjustment	<u>0.75</u>	<u>0.75</u>
Cost Rate	<u>12.25%</u>	<u>12.35%</u>
Recommended Range	<u>12.00%-12.50%</u>	

27 After reviewing the cost rates based upon the four models, I conclude that
28 common equity cost rates of 11.50% and 11.60% are indicated based upon the
29 application of all four models to each proxy group, respectively. As will be
30 discussed subsequently, United is much smaller than the average company in
31 either proxy group. All else equal, small size means greater business risk. Thus, I
32 have added a business risk adjustment of 0.75% to the indicated common equity
33 cost rates of each proxy group in arriving at point estimates of the cost of
34 common equity of 12.25% and 12.35%. However, after reviewing the results of all

1 four cost of common equity models applied to the market data of both proxy
2 groups and keeping in mind that rate of return analysis involves a significant
3 amount of informed expert judgment, my recommended common equity cost rate
4 range is 12.00% to 12.50% applicable to Unity's jurisdiction rate base.
5

6 III. GENERAL PRINCIPLES

7 Q. What general principles have you considered in arriving at your recommended
8 common equity cost rate range of 12.00% to 12.50%.
9

10 A. In unregulated industries, marketplace competition is the principal determinant
11 establishing the price of a product or service. In the case of regulated public
12 utilities, regulation must act as a substitute for marketplace competition.
13 Consequently, marketplace data must be relied upon to assure that the utility can
14 fulfill its obligations to the public and provide adequate service at all times. This
15 requires a level of earnings sufficient to maintain the integrity of presently invested
16 capital and permit the attraction of needed new capital at a reasonable cost in
17 competition with other comparable-risk firms. These standards for a fair rate of
18 return have been established by the U.S. Supreme Court in the Hope and
19 Bluefield cases cited previously. Consequently, in my determination of a fair rate
20 of return, I have made every effort to also evaluate data gathered from the
21 marketplace for utilities similar in risk to the Company.
22

23 IV. BUSINESS RISK

24 Q. Please define business risk and explain why it is important to the determination of
25 a fair rate of return?
26

27 A. Business risk is a collective term which incorporates all of the risks of a firm other

1 than financial risk, which will be discussed subsequently. Examples of business
2 risk include the quality of management and the regulatory environment which have
3 a direct bearing on earnings.

4 Business risk is important to the determination of a fair rate of return
5 because the greater the level of risk, the greater the rate of return investors
6 demand, consistent with the basic financial precept of risk and return.

7
8 Q. Please discuss the business risks facing the water industry in general.

9
10 A. Standard & Poor's (S&P)³ has noted that while most of the regulatory risks
11 associated with the Safe Drinking Water Act are behind the industry, the industry
12 still faces the risks related to replacing aging transmission and distribution
13 systems. As S&P states⁴:

14
15 Yet, there will always be a steady stream of rate cases to
16 incorporate spending related to upgrading plants and pipelines.
17 Another challenge is the possible move toward performance-based
18 ratemaking and achieving the efficiencies necessary under this type
19 of regulation to earn a reasonable equity return.
20

21 In addition, because the water industry is much more capital-intensive than the
22 electric, natural gas or telephone industries, the investment required to produce a
23 dollar of revenue is greater. Thus, the challenge to water utilities is significant.

24 As noted by S&P⁵:

25
26 Additional challenges, such as limited growth prospects, regulatory
27 lag, and low authorized returns and depreciation rates (about 2%
28 versus around 3% for electric utilities), will continue to hamper

³ Standard & Poor's, Global Sector Review, December 1999, pp. 319-322.

⁴ Id., p. 320.

⁵ Standard & Poor's, CreditWeek, June 20, 1994, p. 38.

1 financial performance in this highly capital-intensive business.
2

3 Lower depreciation rates, one of the principal sources of internal cash flows
4 for all utilities, mean that water utility depreciation as a source of internally-
5 generated cash is far less than for electric, natural gas or telephone utilities.
6 Water utilities' assets have longer lives and, hence, longer capital recovery
7 periods. As such, water utilities face greater risk due to inflation which results in a
8 higher replacement cost per dollar of net plant than for other types of utilities.

9 Moody's⁶ also notes that:

10
11 Over the next several years, the credit quality of the U.S. water
12 utility industry as a whole will be pressured by two factors: the costs
13 of compliance with environmental legislation and of ongoing
14 infrastructure development, and expansion beyond traditional
15 service territories.
16

17 Moody's believes that the cost of compliance with environmental
18 mandates will be more an issue for small investor-owned utilities and
19 for municipally owned water systems than for large investor-owned
20 utilities.
21

22 * * *
23

24 We expect that the credit quality of the smaller investor-owned and
25 municipal and private water utilities will likely deteriorate over the
26 next several years, reflecting continued environmental compliance
27 requirements, and higher capital investments in constructing water
28 treatment facilities, improving and replacing maturing distribution
29 and delivery infrastructure.
30

31 In view of the foregoing, it is clear that their high degree of capital intensity
32 coupled with the need for substantial infrastructure capital spending, require
33 regulatory support in the form of adequate and timely rate relief so they will be
34 able to successfully meet the challenges they face.
35

⁶ Moody's Investors Service, Global Credit Research, "The Water Utility Industry: Risks Rise for Last U.S. Regulated Monopoly", Special Comment, February 1998, pp. 1 and 6.

1 Q. Does United face additional extraordinary business risk?

2
3 A. Yes. United's smaller size, i.e., assets and liabilities of \$2.9 million at December
4 31, 2000 (see United Utility Companies, Inc.'s Application for Adjustment of Rates
5 and Charges for the Provision of Water and Sewer Service, Schedule A,
6 Application Exhibit B) vis-à-vis average total capital of approximately \$768.9
7 million in 2000 for the proxy group of nine C.A. Turner water companies (see page
8 1 of Schedule 3) and \$1,599.2 million in 2000 for the proxy group of four Value
9 Line water companies (see page 1 of Schedule 4) indicates greater relative
10 business risk because all else equal, size has a bearing on risk. In addition, the
11 effect of United's small size on its business risk is exacerbated by United's recent
12 history of negative net income. A review of its Annual Report to the Public
13 Service Commission of South Carolina reveals that on a combined basis, its water
14 and sewer operations have experienced negative net income in four of the five
15 years ended 2000 as summarized in the table below:

16
17 Table 3

	<u>2000</u>	<u>1999</u>	<u>1998</u>	<u>1997</u>	<u>1996</u>
	(\$000's)				
Net Income –					
Combined Water and					
Sewer Operations	(\$136.6)	\$3.9	(\$2.4)	(\$50.4)	(\$56.4)

25 Source: Annual Reports to the Public Service Commission of South Carolina –
26 1996 - 2000

27
28 Q. Please explain why size has a bearing on business risk.

29
30 A. Smaller companies are less capable of coping with significant events which affect
31 sales, revenues and earnings.

The loss of revenues from a few larger customers, for example, would have a greater effect on a small company than on a much larger company with a larger customer base. Because the Company is the regulated utility to whose rate base the Commission's ultimately allowed overall cost of capital and fair rate of return will be applied, the relevant risk reflected in the cost of capital must be that of the Company, including the impact of its small size on common equity cost rate. Size is an important factor which affects common equity cost rate, and the Company is significantly smaller than the average company in either the proxy group based upon total investor-provided capital as shown below:

Table 4

	<u>2000 Total Capital</u> (\$ millions)	<u>Times Greater than The Company</u>	<u>Market Capitalization</u> (\$ Millions)	<u>Times Greater than the Company</u>
Proxy Group of Nine				
C.A. Turner				
Water Companies	\$786.922 (1)	267.7x	\$807.832 (4)	NA
Proxy Group of Four				
Value Line Water Cos.	1,599.210 (2)	543.9x	1,621.691 (4)	NA
United Utility Cos., Inc.	2.940 (3)		NA (5)	

(1) From Schedule 3, page 1 of Exhibit No. ____ (PMA-1).

(2) From Schedule 4, page 1 of Exhibit No. ____ (PMA-1).

(3) From Total Assets and Liabilities from the Company's Application for Adjustment of Rates and Charges for the Provision of Water and Sewer Service, Schedule A, Application Exhibit B.

(4) From Schedule 1, page 4 of Exhibit No. ____ (PMA-1).

(5) Since United has a negative common equity balance, its market capitalization cannot be estimated.

I have also made a study of the market capitalization of the proxy group of nine C.A. Turner water companies and the proxy group of four Value Line water companies. The results are shown on page 6 of Schedule 1 of Exhibit No. ____ (PMA-1) which summarizes the market capitalizations as of December 20, 2001.

1 United's common stock is not publicly traded and its common equity
2 account at December 30, 2000 had a negative balance. Thus, it is not possible to
3 estimate its market capitalization. But clearly, with total assets and liabilities of but
4 approximately \$2.9 million, its theoretical market capitalization would be grossly
5 outsized by that of both the proxy group of nine C.A. Turner water companies and
6 the proxy group of four Value Line water companies. It is conventional wisdom,
7 supported by actual returns over time, and a general premise contained in basic
8 finance textbooks, that smaller companies tend to be more risky causing investors
9 to expect greater returns as compensation for that risk.

10
11 Q. Does the financial literature affirm a relationship between size and common equity
12 cost rate?

13
14 A. Yes. Brigham⁷ states:

15 A number of researchers have observed that portfolios of small-
16 firms have earned consistently higher average returns than those
17 of large-firms stocks; this is called "small-firm effect." On the
18 surface, it would seem to be advantageous to the small firms to
19 provide average returns in a stock market that are higher than
20 those of larger firms. In reality, it is bad news for the small firm;
21 what *the small-firm effect means is that the capital market*
22 *demands higher returns on stocks of small firms than on*
23 *otherwise similar stocks of the large firms.* (italics added)
24

25 26 V. FINANCIAL RISK

27 Q. Please define financial risk and explain why it is important to the determination of
28 a fair rate of return?

29
30 A. Financial risk is the additional risk created by the introduction of senior capital,

⁷ Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 623.

1 i.e., debt and preferred stock, into the capital structure. In other words, the higher
2 the proportion of senior capital in the capital structure, the higher the financial risk.

3 Utilities formerly were considered to have much less business risk vis-a-vis
4 unregulated enterprises, and, as a result, a larger percentage of debt capital was
5 acceptable to investors. In June 1999, S&P revised its utility financial targets to
6 create a single set of financial targets for all utilities. S&P's current matrix
7 approach to the bond rating process for utilities can be found in Exhibit No. ____
8 (PMA-1), Schedule 2, pages 11 and 12, while pages 1 through 10 describe the
9 utility bond rating process. As shown on page 12, S&P's revised matrix approach
10 to utilities establishes financial target ratios for ten levels of business
11 position/profile with "1" being considered lowest risk and "10" being highest risk.

12 As shown on Exhibit No. ____ (PMA-1), Schedule 12, page 2, the average
13 S&P bond rating and business position of the nine C.A. Turner water companies
14 and the four Value Line water companies are A+ and AA-/A+, respectively, and
15 "2.8", which rounds to "3".

16
17 Q. How can one measure the combined business and financial risks, i.e., investment
18 risk of an enterprise?

19
20 A. Similar bond ratings reflect similar combined business and financial risks, i.e., total
21 risk. Although the specific business or financial risks may differ between
22 companies, the same bond rating indicates that the combined risks are similar as
23 the bond rating process reflects acknowledgment of all diversifiable business and
24 financial risks. For example, S&P expressly states that the bond rating process
25 encompasses a qualitative analysis of business and financial risks (see pages 3
26 through 10 of Schedule 2 of Exhibit No. ____ (PMA-1). There is no perfect single
27 proxy, such as bond rating or common stock ranking, by which one can

1 differentiate common equity risk between companies. However, the bond rating
2 provides a useful means to compare/differentiate common equity risk between
3 companies because it is the result of a thorough and comprehensive analysis of
4 all diversifiable business and financial risks, i.e., investment risk.

5 The Company's ratemaking debt ratio of 50.08% is somewhat lower than
6 the average 2000 total debt ratios of the nine C.A. Turner water companies,
7 53.18%, as shown on page 3 of Schedule 3 of Exhibit No. ____ (PMA-1) and of the
8 four Value Line water companies, 55.72%, as shown on page 3 of Schedule 4,
9 indicating similar, but slightly less, relative financial risk. However, the Company's
10 smaller size vis-à-vis the average company in both proxy groups indicates greater
11 relative business risk because, all else equal, size has a bearing on risk.

12 VI. UNITED UTILITY COMPANIES, INC. 13 14

15 Q. Have you reviewed financial data for United?

16
17 A. Yes. United is a wholly-owned subsidiary of Utilities, Inc. and provides water and
18 wastewater services to approximately 90 (water) and 1,400 (sewer) retail
19 customers in the counties of Greenville, Cherokee, Anderson, Union, Greenwood
20 and Spartanburg, South Carolina.
21

22 VII. PROXY GROUPS

23 Q. Please explain how you chose the proxy group of nine C.A. Turner water
24 companies.
25

26 A. The basis of selection for the proxy group of nine C.A. Turner water companies
27 were those companies that meet the following criteria: 1) they are included in the
28 Water Company Group of C.A. Turner Public Utility Reports (December 2001); and

1 2) they have Thomson FN/first call consensus projected growth rates in earnings
2 per share. Nine companies met all of these criteria.

3
4 Q. Please describe Schedule 3.

5
6 A. Schedule 3 contains comparative capitalization and financial statistics for the nine
7 C.A. Turner water companies for the years 1996 through 2000. The schedule
8 consists of two pages. Page 1 contains a summary of the comparative data for the
9 years 1996-2000, while page 2 contains notes relevant to page 1, as well as the
10 basis of selection of the individual companies in the proxy group.

11 During the five-year period ending 2000, the achieved average earnings rate
12 on book common equity for this group ranged between 10.1% in 2000, and 11.1% in
13 1998, and averaged 10.9%. The five-year average market/book ratio ending 2000
14 was 176.9%. The five-year average ending 2000 common equity ratio based on
15 total investor-provided capital was 46.3%, while the five-year average dividend
16 payout ratio was 68.5%.

17 Coverage of interest charges, excluding all AFUDC from income available to
18 pay such charges, before income taxes for the years 1996-2000 ranged between
19 2.77 and 3.65 times and averaged 3.18 times during the five-year period.

20
21 Q. Please explain how you chose the proxy group of four Value Line water companies.

22
23 A. The basis of selection for the proxy group of four Value Line water companies were
24 those companies that are included in the Water Utility Group of Value Line
25 Investment Survey (Standard Edition – November 2, 2001). Four companies met
26 this criterion.

1 Q. Please describe Schedule 4.

2
3 A. Schedule 4 contains comparative capitalization and financial statistics for the four
4 Value Line water companies for the years 1995 through 2000. The schedule
5 consists of two pages. Page 1 contains a summary of the comparative data for the
6 years 1996-2000, while page 2 contains notes relevant to page 1, as well as the
7 basis of selection of the individual companies in the proxy group.

8 During the five-year period ending 2000, the achieved average earnings rate
9 on book common equity for this group ranged between 10.8% in 1999 and 11.7% in
10 1997, and averaged 11.2%. The five-year average market/book ratio ending 2000
11 was 192.4%. The five-year average ending 2000 common equity ratio based on
12 total investor-provided capital was 44.4%, while the five-year average dividend
13 payout ratio was 66.4%.

14 Coverage of interest charges, excluding all AFUDC from income available to
15 pay such charges, before income taxes for the years 1996-2000 ranged between
16 2.94 and 3.21 times and averaged 3.04 times during the five-year period.

17
18 VIII. CAPITAL STRUCTURE RATIOS

19 Q. Are the Company's proposed capital structure ratios appropriate in developing an
20 overall fair rate of return for the Company?

21
22 A. Yes, the consolidated capital structure ratios of Utilities, Inc., United's parent
23 company, are appropriate to use for cost of capital purposes for United. The price
24 of service should be cost-based and company-specific to the greatest extent
25 possible and should reflect the mix of capital financing the Company's rate base(s).

26 When an operating utility issues its own senior capital in the external capital
27 markets, it is proper for rate of return purposes to use the capital structure ratios

1 and related senior capital cost rates of the regulated operating utility. However,
2 when the parent provides all of the operating utility's external capital, it is
3 appropriate to employ the capital structure and fixed capital cost rates of the parent
4 and its subsidiaries on a consolidated basis for rate of return purposes if they are
5 reasonable vis-à-vis those maintained by utilities of similar risk and consistent with
6 S&P's financial target ratios. The per books capital structure of United consists of
7 negative common equity and is thus unsuitable for cost of capital purposes. All its
8 external capital requirements are raised by Utilities, Inc. Therefore, it is appropriate
9 that the consolidated capital structure ratios of Utilities, Inc. be employed when
10 determining the overall rate of return for United.

11
12 Q. How does United's ratemaking common equity ratio of 49.92%, actual at December
13 31, 2000 compare with the common equity ratios maintained by the companies in
14 the proxy groups?

15
16 A. Given the Company's small size vis-à-vis the companies in the proxy group as
17 previously discussed, United's ratemaking common equity ratio of 49.92%, actual at
18 December 31, 2000, is reasonable to use and consistent with the range of common
19 equity ratios maintained on average, by the companies in the proxy group of nine
20 C.A. Turner water companies and four Value Line water companies upon which I
21 base my 12.00% to 12.50% common equity cost rate range. The common equity
22 ratios of the nine water companies ranged from 36.56% to 58.78% in 2000 and
23 averaged 45.85% as shown on page 3 of Schedule 3 of Exhibit ____ (PMA-1).
24 Likewise, the common equity ratios of the four Value Line water companies ranged
25 from 36.56% to 48.87% in 2000 and average 43.55% as shown on page 3 of
26 Schedule 4 of Exhibit No. ____ (PMA-1). As discussed previously, the bond rating
27 process encompasses a qualitative analysis of business and financial risks. Total

diversifiable investment risk is the sum of business and financial risks. Given the Company's small size, and hence greater relative business risk, vis-à-vis the proxy companies, its ratemaking common equity ratio of 49.92% is consistent with that of the proxy companies, given their much larger size and hence lower business risk.

Q. How do United's ratemaking capital structure ratios compare with S&P's revised financial target ratios?

A. They are reasonable in light of S&P's revised financial target ratios of total debt to total capital for utilities with long-term debt rated in the A and AA categories and of similar business position as the proxy groups, i.e., "3" (see page 2 of Schedule 12 of Exhibit No. ____ (PMA-1)).

As shown on page 12 of Schedule 2, based upon S&P's revised financial target ratios, a utility assigned a business position of "3", like the nine C.A. Turner and four Value Line water companies, require a total debt to total capital target ratio in the range of 47.5% to 53.0% in order to maintain an A bond rating. Likewise, S&P's revised financial target ratios require a total debt to total capital target ratio in the range of 42.0% to 53.0% in order to maintain a AA/A bond rating, like the average bond rating for the four Value Line water companies. United's ratemaking total debt ratio is 50.08% at December 31, 2000. A total debt ratio of 50.08% falls near the midpoint, 50.25%, of the range of S&P's revised total debt to total capital target ratio of 47.5% to 53.0% for an A rated utility with a business position of "3" and in the top half of the range of total debt to total capital target ratio of 42.0% to 53.0% for a AA/A rated utility with a business position of "3".

In view of all the foregoing, it is my opinion that a capital structure based upon Utilities, Inc.'s consolidated capital structure at December 31, 2000 comprised of 50.08% total debt and 49.92% common equity is reasonable for United. It is

1 reasonable given United's small relative size, the fact that all of its external capital is
2 provided by its parent, Utilities, Inc., its consistency with the capital structures
3 maintained, on average, by the water companies in the proxy groups of nine C.A.
4 Turner and four Value Line water companies, and its consistency with S&P's
5 revised financial target ratios for a water company to obtain and maintain an A or a
6 AA/A bond rating.

8 IX. LONG-TERM DEBT COST RATE

10 Q. What composite cost rate for debt is most appropriate for use in a cost of capital
11 determination for United?

13 A. Utilities, Inc.'s consolidated composite debt cost rate of 8.62%, actual at December
14 31, 2000 is the most appropriate. It is appropriate because it is the embedded debt
15 cost rate associated with United's ratemaking debt ratio; i.e., 50.01% based upon its
16 parent's consolidated capital structure.

18 X. COMMON EQUITY COST RATE MODELS

19 A. The Efficient Market Hypothesis (EMH)

20 Q. Are the cost of common equity models you use market-based models, and hence
21 based upon the EMH?

23 A. Yes. The DCF model is market-based in that market prices are utilized in
24 developing the dividend yield component of the model. The RPM is market-based
25 in that the bond ratings and expected bond yields used in the application of the RPM
26 reflect the market's assessment of risk. In addition, the use of betas to determine
27 the equity risk premium also reflects the market's assessment of risk as betas are

1 derived from regression analyses of market prices. The CAPM is market-based for
2 many of the same reasons that the RPM is market-based, i.e., the use of expected
3 bond (Treasury bond) yields and betas. The CEM is market-based in that the
4 process of selecting the comparable risk non-utility companies is based upon
5 statistics which result from regression analyses of market prices. Therefore, all the
6 cost of common equity models I utilize are market-based models, and hence based
7 upon the EMH.

8
9 Q. Please describe the conceptual basis of the EMH.

10
11 A. The Efficient Market Hypothesis (EMH), which is the foundation of modern
12 investment theory, was pioneered by Eugene F. Fama⁸ in 1970. An efficient market
13 is one in which security prices reflect all relevant information all the time. This
14 implies that prices adjust instantaneously to new information, thus reflecting the
15 intrinsic fundamental economic value of a security.⁹

16 The essential components of the EMH are:

- 17
18 A. Investors are rational and invest in assets providing the
19 highest expected return given a particular level of risk.
20
21 B. Current market prices reflect all publicly available
22 information.
23
24 C. Returns are independent, i.e., today's market returns are
25 unrelated to yesterday's returns.
26
27 D. Capital markets follow a random walk, i.e., the probability
28 distribution of expected returns approximates a normal
29 distribution, i.e., a bell curve.

⁸ Fama, Eugene F., "Efficient Capital Markets: A Review of Theory and Empirical Work". Journal of Finance, May 1970, pp. 383-417.

⁹ Morin, Roger A., Regulatory Finance - Utilities' Cost of Capital. Public Utility Reports, Inc., Arlington, VA, 1994, p. 136.

Brealey and Myers state:¹⁰

When economists say that the security market is 'efficient', they are not talking about whether the filing is up to date or whether desktops are tidy. They mean that information is widely and cheaply available to investors and that all relevant and ascertainable information is already reflected in security prices.

The three forms of the EMH are:

- A. The "weak" form which asserts that all past market prices and data are fully reflected in securities prices, i.e., technical analysis cannot enable an investor to "outperform the market".
- B. The "semistrong" form which asserts that all publicly available information is fully reflected in securities prices, i.e., fundamental analysis cannot enable an investor to "outperform the market".
- C. The "strong" form which asserts that all information, both public and private, is fully reflected in securities prices, i.e., even insider information cannot enable an investor to "outperform the market".

The "semistrong" form of the EMH is generally held to be true because the use of insider information often enables investors to "outperform the market" and earn excessive returns. The generally-accepted "semistrong" form of the EMH means that all perceived risks are taken into account by investors in the prices they pay for securities. Investors are aware of all publicly-available information, including bond ratings; discussions about companies by bond rating agencies and investment analysts as well as the various cost of common equity methodologies (models) discussed in the financial literature. In an attempt to emulate investor behavior, this means that no single common equity cost rate model should be relied upon in determining a cost rate of common equity and that the results of multiple cost of common equity models should be taken into account.

¹⁰ Brealey, R.A. and Myers, S.C., Principles of Corporate Finance, McGraw-Hill Publications, Inc., 1996, pp. 323-324.

1
2 Q. Is there support in the academic literature for the need to rely upon more than one
3 cost of common equity model in arriving at a recommended common equity cost
4 rate?

5
6 A. Yes. For example, Phillips¹¹ states:

7
8 Since regulation establishes a level of authorized earnings which, in
9 turn, implicitly influences dividends per share, *estimation of the growth*
10 *rate from such data is an inherently circular process. For these*
11 *reasons, the DCF model "suggests a degree of precision which is in*
12 *fact not present" and leaves "wide room for controversy and argument*
13 *about the level of k". (italics added) (p. 396)*

14
15 * * *

16
17 Despite the difficulty of measuring relative risk, the comparable
18 earnings standard is no harder to apply than is the market-determined
19 standard. The DCF method, to illustrate, requires a subjective
20 determination of the growth rate the market is contemplating.
21 Moreover, as Leventhal has argued: *'Unless the utility is permitted to*
22 *earn a return comparable to that available elsewhere on similar risk, it*
23 *will not be able in the long run to attract capital.'* (italics added) (p. 398)

24
25 Also, Morin¹² states:

26
27 Sole reliance on the DCF model ignores the capital market evidence
28 and financial theory formalized in the CAPM and other risk premium
29 methods. The DCF model is one of many tools to be employed in
30 conjunction with other methods to estimate the cost of equity. *It is not*
31 *a superior methodology that supplants other financial theory and*
32 *market evidence. The broad usage of the DCF methodology in*
33 *regulatory proceedings does not make it superior to other methods.*
34 (italics added) (Morin, pp. 231-232)

35
36 Each methodology requires the exercise of considerable judgment on
37 the reasonableness of the assumptions underlying the methodology

¹¹ Charles F. Phillips, Jr., The Regulation of Public Utilities-Theory and Practice, 1993, Public Utility Reports, Inc., Arlington, VA, p. 396, 398.

¹² Roger A. Morin, Regulatory Finance-Utilities' Cost of Capital, 1994, Public Utilities Reports, Inc., Arlington, VA, pp. 231-232, 239-240.

1 and on the reasonableness of the proxies used to validate a theory.
2 *The failure of the traditional infinite growth DCF model to account for*
3 *changes in relative market valuation, discussed above, is a vivid*
4 *example of the potential shortcomings of the DCF model when applied*
5 *to a given company. It follows that more than one methodology should*
6 *be employed in arriving at a judgment on the cost of equity and that*
7 *these methodologies should be applied across a series of comparable*
8 *risk companies. ...Financial literature supports the use of multiple*
9 *methods.* (italics added) (Morin, p. 239)

10
11 Professor Eugene Brigham, a widely respected scholar and finance
12 academician asserted:

13
14 *In practical work, it is often best to use all three methods -CAPM, bond*
15 *yield plus risk premium, and DCF - and then apply judgement when the*
16 *methods produce different results. People experienced in estimating*
17 *capital costs recognize that both careful analysis and very fine*
18 *judgements are required. It would be nice to pretend that these*
19 *judgements are unnecessary and to specify an easy, precise way of*
20 *determining the exact cost of equity capital. Unfortunately, this is not*
21 *possible.* (italics added) (Morin, pp. 239-240)

22
23 Another prominent finance scholar, Professor Stewart Myers, in his best-
24 selling corporate finance textbook stated:

25
26 *The constant growth formula and the capital asset pricing model are*
27 *two different ways of getting a handle on the same problem.* (italics
28 added) (Morin, p. 240)

29
30 In an earlier article, Professor Myers explained the point more fully:

31
32 Use more than one model when you can. Because estimating the
33 opportunity cost of capital is difficult, only a fool throws away useful
34 information. That means you should not use any one model or
35 measure mechanically and exclusively. Beta is helpful as one tool in a
36 kit, to be used in parallel with DCF models or other techniques for
37 interpreting capital market data. (Morin, p. 240)

38
39
40 In view of the foregoing, it is clear that investors are aware of all of the models
41 available for use in determining common equity cost rate. The EMH requires the
42 assumption that, collectively, investors use them all.

1
2 B. Discounted Cash Flow Model (DCF)

3 1. Theoretical Basis

4 Q. What is the theoretical basis of the DCF model?

5
6 A. The theory of the DCF model is that the present value of an expected future stream
7 of net cash flows during the investment holding period can be determined by
8 discounting the cash flows at the cost of capital, or the capitalization rate. DCF
9 theory suggests that an investor buys a stock for an expected total return rate which
10 is expected to be derived from cash flows received in the form of dividends plus
11 appreciation in market price (the expected growth rate). Thus, the dividend yield on
12 market price plus a growth rate equals the capitalization rate, i.e., the total return
13 rate expected by investors.
14

15 Q. Please comment on the applicability of the DCF model in establishing a cost of
16 common equity for the Company.
17

18 A. The extent to which the DCF is relied upon should depend upon the extent to which
19 the cost rate results differ from those resulting from the use of other cost of common
20 equity models because the DCF model has a tendency to mis-specify investors'
21 required return rate when the market value of common stock differs significantly
22 from its book value. Market values and book values of common stocks are seldom
23 at unity. The market-based DCF model will result in a total annual dollar return on
24 book common equity equal to the total annual dollar return expected by investors
25 only when market and book values are equal, a rare and unlikely situation. In
26 recent years, the market values of utilities' common stocks have been well in
27 excess of their book values as shown on Exhibit No. ____ (PMA-1), page 1 of

1 Schedules 3 and 4 ranging between 140.4% and 202.7% for the proxy group of nine
2 C.A. Turner water companies and between 159.3% and 216.5% for the proxy group
3 of four Value Line water companies.

4 Mathematically, the DCF model understates/overstates investors' required
5 return rate when market value exceeds/is less than book value because, in many
6 instances, market prices reflect investors' assessments of long-range market price
7 growth potentials (consistent with the infinite investment horizon implicit in the
8 standard regulatory version of the DCF model) not fully reflected in analysts' shorter
9 range forecasts of future growth for earnings per share (EPS) and dividends per
10 share (DPS) accounting proxies. This indicates the need to better match market
11 prices with investors' longer range growth expectations embedded in those prices.
12 However, the understatement/overstatement of investors' required return rate
13 associated with the application of the market price-based DCF model to the book
14 value of common equity clearly illustrates why reliance upon a single common equity
15 cost rate model should be avoided. Moreover, the majority of regulatory
16 commissions look to more than one method to determine common equity cost rate
17 (see Exhibit No. __ (PMA-1), Schedule 5).

18
19 2. Applicability of a Market-Based Common Equity
20 Cost Rate to a Book Value Rate Base
21

22 Q. Is it reasonable to expect the market values of utilities' common stocks to continue
23 to sell well above their book values?

24
25 A. Yes. I believe that the common stocks of utilities will continue to sell substantially
26 above their book values, because many investors, especially individuals who
27 traditionally committed less capital to the equity markets, will likely continue to
28 commit a greater percentage of their available capital to common stocks in view of

1 lower interest rate alternative investment opportunities and to provide for
2 retirement. The recent past and current capital market environment is in stark
3 contrast to the late 1970's and early 1980's when very high (by historical
4 standards) yields on secured debt instruments in public utilities were available.

5 The significant recent increases in market-to-book ratios have been
6 influenced by factors other than fundamentals such as actual and reported growth
7 in earnings per share (EPS) and dividends per share (DPS). For example, David
8 Wessel in the Wall Street Journal states:¹³

9
10 So if the fundamentals aren't driving stock prices, then what is?
11 It's that hard-to-quantify investor appetite for buying stocks.
12 The market has been strong because lots of people want to
13 hold stocks. It will continue to be strong as long as they
14 continue to be willing to pay more for stocks than they used to.

15
16 * * *

17
18 Psychoanalyzing investors is a favorite pastime, from Wall
19 Street saloons to American livingrooms. Perhaps baby
20 boomers, intent on saving for retirement and their children's
21 college tuition, see stocks as the only smart alternative.
22 Perhaps Generation-Xers fear Social Security will vanish before
23 they retire, and are bulking up on stocks. Perhaps mutual-fund
24 marketing has diverted billions of dollars that once would have
25 ended up in low-interest bank accounts. Perhaps the internet
26 age has dispelled the mystique of the stock market; everyone
27 can do it.

28
29
30 Moreover, allowed ROEs have a limited effect on utilities' market/book
31 ratios as market prices of common stocks are influenced by a number of other
32 factors beyond the direct influence of the regulatory process.

33 For example, Phillips¹⁴ states:

¹³ "If This is a Bubble, It Sure is Hard to Pop," Wall Street Journal, March 30, 1999, pp. A1 and A6.

¹⁴ Id., at p. 395.

1
2 Many question the assumption that market price should equal book
3 value, believing that 'the earnings of utilities should be sufficiently
4 high to achieve market-to-book ratios which are consistent with
5 those prevailing for stocks of unregulated companies.'

6
7 In addition, Bonbright¹⁵ states:

8
9 In the first place, commissions cannot forecast, except within wide
10 limits, the effect their rate orders will have on the market prices of
11 the stocks of the companies they regulate. In the second place,
12 *whatever the initial market prices may be, they are sure to change*
13 *not only with the changing prospects for earnings, but with the*
14 *changing outlook of an inherently volatile stock market.* In short,
15 market prices are beyond the control, though not beyond the
16 influence of rate regulation. Moreover, even if a commission did
17 possess the power of control, any attempt to exercise it ... would
18 result in harmful, uneconomic shifts in public utility rate levels.
19 (italics added)
20

21 In view of the foregoing, a mismatch often results in the application of the
22 DCF model as market prices reflect long range expectations of growth in market
23 prices (consistent with the presumed infinite investment horizon of the standard
24 DCF model), while the short range forecasts of growth in accounting proxies, i.e.,
25 EPS and DPS, do not reflect the full measure of growth (market price
26 appreciation) expected in per share market value.

27
28 Q. Please describe the information shown on Schedule 6.

29
30 A. Schedule 6 demonstrates that the market prices of common stocks have not been
31 driven only by growth in EPS and/or DPS. Schedule 6 shows the stock price
32 index levels, EPS and DPS of the S&P Utilities and S&P 500 Composite Indices
33 on a quarterly basis from the second quarter of 1990, just prior to the close of the

¹⁵ James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, 1988, Public Utilities Reports, Inc., Arlington, VA, p. 334.

1 Company's last rate case, through the second quarter of 2001.

2 It is shown at the bottom of Schedule 6 that the S&P Utilities Index
3 experienced a 114.39% increase in market price over the period, while growth in
4 DPS was only 9.66% and growth in EPS was 7.1%. In addition, the S&P 500
5 Composite Index experienced a 242.00% increase in market price, 73.05%
6 increase in EPS and 34.45% increase in DPS. In contrast, inflation, as measured
7 by the change in the Gross Domestic Product¹⁶ (GDP) chain-type price index and
8 by the change in the Consumer Price Index¹⁷ (CPI) aggregated 25.08% and
9 33.95% over their entire period. The GDP Price Index at the end of the second
10 quarter 1990 was 86.17 and 107.78 at the end of the fourth quarter 2000 ($25.08\% = ((107.78 \div 86.17) - 1)$. CPI was 129.90 at the end of the second quarter 1990
11 and 174.00 at the end of the fourth quarter 2000 ($33.95\% = ((174.00 \div 129.90) - 1)$.
12
13

14 It is clear from the foregoing that many factors influence market prices and
15 that allowed or even achieved rates of return on book common equity have a
16 limited effect on utilities' market-to-book ratios because the market prices of
17 common stocks are influenced by many factors beyond the control of regulators.
18

19 Q. Please explain why a DCF-derived common equity cost rate mis-specifies
20 investors' expected common equity cost rate when the market/book ratio is
21 greater or less than unity (100%).
22

23 A. Under the DCF model, the rate of return investors require is related to the price
24 paid for a stock, i.e., market price is the basis upon which they formulate the
25 required rate of return. A regulated utility is limited to earning on its net book
26 value (depreciated original cost) rate base. As discussed previously, market

¹⁶ Gross Domestic Product information from the Bureau of Economic Analysis.

¹⁷ Consumer Price Index information from the Bureau of Labor Statistics.

1 when market values differ significantly from book values, a market-based DCF
2 cost rate applied to the book value of common equity will not accurately reflect
3 investors' expected common equity cost rate. It will either overstate or understate
4 investors' expected common equity cost rate (without regard to any adjustment for
5 flotation costs which may, at times, be appropriate on an ad hoc basis) depending
6 upon whether market value is less than or greater than book value.

7 Exhibit No. __ (PMA-1), Schedule 7 demonstrates how a market-based
8 DCF cost rate applied to a book value which is either below or above market
9 value will either understate or overstate investors' expectations because these
10 expectations are based on a required return on market value. As shown, there is
11 no realistic opportunity to earn the market-based rate of return on book value. As
12 shown in Column 1, investors expect a 10.00% return on a market price of
13 \$24.00. As shown in Column 2, when the 10.00% return rate on market value is
14 applied to book value which is approximately 55.5% of market value, the total
15 annual return opportunity is just \$1.333 on book value. With an annual dividend
16 of \$0.960, there is an opportunity for growth of \$0.373 which translates to just
17 1.55% in contrast to the 6.00% growth in market price expected by investors.
18 There is no way to possibly achieve the expected growth of \$1.440 or 6.00%
19 absent a huge cut in the annual dividend, an unreasonable expectation which
20 would result in an extremely adverse reaction by investors because it would be a
21 sign of extreme financial distress.

22 Conversely, in Column 3, where the market-to-book ratio is 80%, when the
23 10.00% return rate on market value is applied to a book value which is
24 approximately 25.0% greater than market value, the total annual return
25 opportunity is \$3.000 on book value with an annual dividend of \$0.960, there is an
26 opportunity for growth of \$2.040 which translates to 8.50% in contrast to the
27 6.00% growth in market price expected by investors.

1 In view of the foregoing, it is clear that the DCF model either understates
2 or overstates investors' required cost of common equity capital when market
3 values exceed or are less than their underlying book values and thus multiple cost
4 of common equity models should be relied upon when estimating investors'
5 expectations.

6
7 Q. Have any commissions explicitly stated that the DCF model should not be relied
8 upon exclusively?

9
10 A. Yes. As stated previously, the majority of regulatory commissions rely upon no
11 single cost of common equity model.

12 Specifically, the Iowa Utilities Board (IUB) has recognized the tendency of
13 the DCF model to understate investors' expected cost of common equity capital
14 when market values are significantly above their book values. In its June 17,
15 1994 Final Decision and Order in Docket No. RPU-93-9 Re U.S. West
16 Communications, the IUB stated:¹⁸

17
18 While the Board has relied in the past on the DCF model, in *Iowa*
19 *Electric Light and Power Company*, Docket No. RPU-89-9, "Final
20 Decision and Order" (October 15, 1990), the Board stated: "[T]he
21 DCF model may understate the return on equity in some
22 circumstances. This is particularly true when the market is
23 relatively volatile and the company in question has a market-to-
24 book ratio in excess of one." Those conditions exist in this case
25 and the Board will not rely on the DCF return. (Consumer
26 Advocate Ex. 367, See Tr. 2208, 2250, 2277, 2283-2284). *The*
27 *DCF approach underestimates the cost of equity needed to assure*
28 *capital attraction during this time of market uncertainty and*
29 *volatility. The board will, therefore, give preference to the risk*
30 *premium approach.* (italics added)
31

32 Similarly, in 1994, the Indiana Utility Regulatory Commission (IURC), for example,

¹⁸ Public Utilities Reports - 152 PUR4th, Re: U.S. West Communications, Inc., Docket No. RPU-93-9, p. 459.

1 recognized the tendency of the DCF model to understate the cost of equity when
2 market value exceeds book value¹⁹:

3
4 In determining a common equity cost rate, we must again
5 recognize the tendency of the traditional DCF model, . . . to
6 understate the cost of common equity. As the Commission stated
7 in Indiana-Mich. Power Co. (IURC 8/24/90), Cause No. 38728, 116
8 PUR 4th 1, 17-18, *"the unadjusted DCF result is almost always*
9 *well below what any informed financial analyst would regard as*
10 *defensible, and therefore, requires an upward adjustment based*
11 *largely on the expert witness's judgement."* (italics added)
12

13 * * *

14
15 [u]nder the traditional DCF model . . . the appropriate earnings
16 level of the utility would not be derived by applying the DCF result
17 to the market price of the Company's stock . . . it would be applied
18 to the utility's net original cost rate base. *If the market price of the*
19 *stock exceeds its book value, . . . the investor will not achieve the*
20 *return which the model finds is necessary.* (italics added)
21

22 Also, the Hawaii Public Utilities Commission recognized this phenomenon in a
23 decision dated 6/30/92²⁰ in a case regarding Hawaiian Electric Company, Inc.,
24 when it stated:

25
26 In this docket, as in other rate proceedings, experts disagree on
27 the relative merits of the various methods of determining the cost
28 of common equity. In this docket, HECO is particularly critical of
29 the use of the constant growth DCF methodology. It asserts that
30 method is imbued with downward bias and, thus, its use will
31 understate common equity cost. *We are cognizant of the*
32 *shortcomings of the DCF method.* There are, however,
33 shortcomings to be found with the use of CAPM and the RP
34 methods as well. We reiterate that, despite the problems with the
35 use of any methodology, *all methods should be considered and*
36 *that the DCF method and the combined CAPM and RP methods*
37 *should be given equal weight.* (italics added)
38

¹⁹ Public Utilities Reports - 150PUR4th, Re: Indiana-American Water Company, Inc., Cause No. 39595, pp. 167-168.

²⁰ Public Utilities Reports - 134 PUR4th, Re: Hawaiian Electric Company, Inc., Docket No. 6998, p. 479.

1
2 More recently, the Pa PUC, in its January 29, 1998 Opinion and Order in
3 Docket Nos. R-00973947 and R-00973947 C0001 through C0014 re: United
4 Water Pennsylvania, Inc. (UWPA) stated:

5
6 In considering this matter, we observe that the ALJ correctly stated
7 that we have primarily relied on the DCF methodology in arriving at
8 our determination of the proper cost of common equity. We have,
9 in numerous recent decisions, determined the cost of common
10 equity primarily based upon the DCF method and informed
11 judgment.

12
13 * * *

14
15 However, we have . . . recognized that the sole use of the DCF
16 method can result in an understatement of the common equity cost
17 rates.

18
19 * * *

20
21 Our review of the record in this proceeding indicates that the
22 Company presented evidence in this proceeding to support a
23 return on common equity as high as 12.4 percent, as well as its
24 recommended return of 11.9 percent.

25
26 We determine that, in light of all the evidence of record, UWPA is
27 entitled to a return on common equity of 11.00 percent. We
28 recognize that it is within our purview to exercise our informed
29 judgment and to consider the higher risks as evidenced by the
30 Company's CAPM and RP analysis.

31
32 * * *

33
34 This is consistent with our recent decision in Roaring Creek, supra,
35 wherein we determined that a market-based cost of common
36 equity for the Roaring Creek Division of Consumers Pennsylvania
37 Water Company is 10.98 percent.

38
39
40 Q. Do other cost of common equity models contain unrealistic assumptions and have
41 shortcomings?
42

1 A. Yes. That is why I am not recommending that any of the models be relied upon
2 exclusively. I have focused on the shortcomings of the DCF model because some
3 regulatory commissions still place excessive or exclusive reliance upon it.
4 Although the DCF model is useful, it is not a superior methodology that supplants
5 financial theory and market evidence based upon other valid cost of common
6 equity models. For these reasons, no model, including the DCF, should be relied
7 upon exclusively.

8
9 3. Application of the DCF Model
10

11 a. Dividend Yield

12 Q. Please describe the dividend yield you used in your application of the DCF model.
13

14 A. The unadjusted dividend yields are based upon an average of a recent spot date
15 (December 20, 2001) as well as an average of the three, six and twelve months
16 ended November 30, 2001, respectively, which are shown on Exhibit No. __
17 (PMA-1), Schedule 9. The average unadjusted yields of 3.4% for the nine C.A.
18 Turner water companies and 3.3% for the four Value Line water companies are
19 shown on Schedule 8, Line Nos. 1 and 6 and individually for the companies in the
20 proxy groups on Schedule 9.
21

22 b. Discrete Adjustment of Dividend Yield

23 Q. Please explain the dividend growth component shown on Exhibit No. __ (PMA-1),
24 Schedule 8, Line Nos. 2 and 7.
25

26 A. Because dividends are paid quarterly, or periodically, as opposed to continuously
27 (daily), an adjustment to the dividend yield must be made. This is often referred to
28 as the discrete, or the Gordon Periodic, version of the DCF model.

1 Since the various companies in the proxy group increase their quarterly
2 dividend at various times during the year, a reasonable assumption is to reflect
3 one-half the annual dividend growth rate in the D_1 expression, or $D_{1/2}$. This is a
4 conservative approach which does not overstate the dividend yield which should
5 be representative of the next twelve-month period. Therefore, the actual average
6 dividend yields on Line Nos. 1 and 6 of Schedule 8 have been adjusted upward to
7 reflect one-half the growth rates shown on Line Nos. 4 and 9.

8
9 c. Selection of Growth Rates for Use in the DCF Model

10 Q. Please explain the basis of the growth rates of 5.4%/5.4% for the proxy group of
11 nine C.A. Turner water companies and 5.2%/6.5% for the proxy group of four
12 Value Line water companies which you use in your application of the DCF model.

13
14 A. Schedule 10 of Exhibit No. __ (PMA-1) indicates that 81.2% of the common
15 shares of the proxy group of nine C.A. Turner water companies and 73.8% of the
16 common shares of the proxy group of four Value Line water companies are held
17 by individuals as opposed to institutional investors. Individual investors are
18 particularly likely to place great significance on the opinions expressed by financial
19 information services, such as Value Line and Thomson FN/First Call, which are
20 easily accessible and/or available on the Internet.

21 Forecasts by analysts, including Value Line, are typically limited to five
22 years. In my opinion, I believe that investors in water utilities would have little
23 interest in historical growth rates beyond the most recent five years because an
24 historical five-year period balances the five-year period for projected growth rates.
25 Consequently, the use of five-year historical and five-year projected growth rates
26 in earnings per share (EPS) and dividends per share (DPS) as well as the sum of
27 internal and external growth in per share value ($BR + SV$) is appropriate to

1 consider in the determination of a growth rate for use in this application of the
2 DCF model. In addition, investors realize that analysts have significant insight into
3 the dynamics of the industries and they analyze individual companies as well as
4 companies' abilities to effectively manage the effects of changing laws and
5 regulations. Consequently, I have reviewed analysts' projected growth in EPS, as
6 well as historical and projected five-year compound growth rates in EPS, DPS and
7 BR + SV for each company in the proxy group. The historical growth rates are
8 from Value Line or calculated in a manner similar to Value Line, while the
9 projected growth rates in earnings are from Value Line and Thomson FN/First Call
10 forecasts. Thomson FN/First Call growth rate estimates are not available for DPS
11 and internal growth, and they do not include the Value Line projections.

12 In addition to evaluating EPS and DPS growth rates, it is reasonable to
13 assume that investors also assess BR + SV. The concept is based on well
14 documented financial theory that future dividend growth is a function of the portion
15 of the overall return to investors which is reinvested in the firm plus the sales of
16 new common stock. Consequently, the growth component as proxied by internal
17 and external growth is defined as follows:

$$18 \quad g = BR + SV$$

19 Where:

20 B = the fraction of earnings retained by the firm,
21 i.e., retention ratio

22 R = the return on common equity

23 S = the growth in common shares outstanding

24 V = the premium/discount of a company's stock price
25 relative to its book value, i.e., one minus the
26 complement of the market/book ratio.
27

28 Consistent with the use of five-year historical and five-year projected
29 growth rates in EPS and DPS, I have derived five-year historical and five-year
30
31

1 projected BR+SV growth. Projected EPS growth rate averages are shown on
2 Line No. 9, while historical and projected growth in DPS, EPS, and BR + SV is
3 shown on Line No. 4, Schedule 8. All of these growth rates are summarized for
4 the companies in the proxy group on page 1, Schedule 11 of Exhibit No.
5 ____ (PMA-1). Supporting growth rate data are detailed on pages 2 through 8 of
6 Schedule 11. Pages 9 through 12 of Schedule 11 contain all of the most current
7 Value Line Investment Survey (Standard Edition) data for those companies in the
8 proxy groups which are covered in the Standard Edition of Value Line Investment
9 Survey.

10 As shown on page 1 of Schedule 11, growth rates for the proxy group of
11 nine C.A. Turner water companies range from 3.1% to 7.3%, with a midpoint of
12 5.2% and an average of 5.6%, while projected growth rates in EPS averaged
13 5.2%. Consequently, I conclude that growth rates of 5.4%/5.2% for the proxy
14 group of nine C.A. Turner water companies are suitable to use in the application
15 of the DCF model. Likewise, as also shown on page 1 of Schedule 11, growth
16 rates for the proxy group of four Value Line water companies also range from
17 3.1% to 7.3%, with a midpoint of 5.2% and an average of 5.6%, while projected
18 growth rates in EPS averaged 6.5%. Consequently, I conclude that growth rates
19 of 5.4%/6.5% for the proxy group of four Value Line water companies are suitable
20 to use in the application of the DCF model.

21
22 Q. Please summarize the growth DCF model results.

23
24 A. As shown on Exhibit No. ____ (PMA-1), Schedule 8, Line Nos. 5 and 10, the results
25 of the applications of the DCF model are 8.9%/8.8% for the proxy group of nine
26 C.A. Turner water companies and 8.7%/9.9% for the proxy group of four Value
27 Line water companies. As shown on Line No. 8, the growth DCF cost rates for

1 the two proxy groups are 8.8% and 9.4%, respectively.

2
3 C. The Risk Premium Model (RPM)

4 1. Theoretical Basis

5 Q. Please describe the theoretical basis of the RPM.

6
7 A. Risk Premium theory indicates that the cost of common equity capital is greater
8 than the prospective company-specific cost rate for long-term debt capital. In
9 other words, the cost of common equity equals the expected cost rate for long-
10 term debt capital plus a risk premium to compensate common shareholders for the
11 added risk of being unsecured and last-in-line in any claim on the corporation's
12 assets and earnings.

13
14 Q. Some analysts state that the RPM is another form of the CAPM. Do you agree?

15
16 A. While there are some similarities, there is a very significant distinction between
17 the two models. The RPM and CAPM both add a "risk premium" to an interest
18 rate. However, the beta approach to the determination of an equity risk premium
19 in the RPM should not be confused with the CAPM. Beta is a measure of
20 systematic, or market, risk, a relatively small percentage of total risk, i.e., the sum
21 of both non-diversifiable systematic and diversifiable unsystematic risk.
22 Unsystematic risk is fully captured in the RPM through the use of the prospective
23 long-term bond yield as can be verified by reference to pages 3 through 10 of
24 Exhibit No. ___ (PMA-1), Schedule 2, which confirm that the bond rating process
25 involves an assessment of all business and financial risks, i.e., total risk. In
26 contrast, the use of a risk-free rate of return in the CAPM does not, and by
27 definition can not, reflect a company's specific, i.e., unsystematic risk.

1 Consequently, a much larger portion of the total common equity cost rate is
2 reflected in the company-specific bond yield (a product of the bond rating) than is
3 reflected in the risk-free rate in the CAPM, or indeed even by the dividend yield
4 employed in the DCF model. Moreover, the financial literature recognizes the
5 RPM and CAPM as two separate and distinct cost of common equity models as
6 discussed previously.

7
8 Q. Have you performed RPM analyses of common equity cost rate for the two proxy
9 groups of water companies?

10
11 A. Yes. The results of my applications of the RPM are summarized on page 1 of
12 Exhibit No. __ (PMA-1), Schedule 12. On Line No. 3, page 1, Schedule 12, I
13 show the average expected yield on A rated public utility bonds of 7.6%. On Line
14 No. 4, I show the adjustments, if necessary, that need to be made to the average
15 7.6% expected A rated utility bond yield so that the expected yields of 7.6% and
16 7.5% in Line No. 5 are reflective of the proxy group of nine C.A. Turner water
17 companies' average Moody's bond rating of A1/A2 and reflective of the proxy
18 group of four Value Line water companies' average Moody's bond rating of A1
19 shown on page 2 of Exhibit No. __ (PMA-1), Schedule 12. On Line No. 6 of page
20 1, my conclusions of an equity risk premium applicable to each proxy group are
21 shown, while the total risk premium common equity cost rates are shown on Line
22 No. 7.

23
24 2. Estimation of Expected Bond Yield

25 Q. Please explain the basis of the expected bond yields of 7.6% and 7.5% applicable
26 to the average company in each proxy group of water companies, respectively.

1 A. Because the cost of common equity is prospective, a prospective yield on
2 similarly-rated long-term debt is essential. As shown on Schedule 12, page 2, the
3 average Moody's bond rating for the proxy group of nine C.A. Turner water
4 companies is A1/A2 and A1 for the proxy group of four Value Line water
5 companies. I relied upon a consensus forecast of about 50 economists of the
6 expected yield on Aaa rated corporate bonds for the six calendar quarters ending
7 with the first calendar quarter of 2003 as derived from the December 1, 2001 Blue
8 Chip Financial Forecasts (shown on page 7 of Schedule 12). As shown on Line
9 No. 1 of page 1 of Schedule 12, the average expected yield on Moody's Aaa rated
10 corporate bonds is 7.0%. It is necessary to adjust that average yield to be
11 equivalent to a Moody's A2 rated public utility bond. Consequently, an adjustment
12 to the average prospective yield on Aaa rated corporate bonds of 0.6% was
13 required. It is shown on Line No. 2, page 1 of Schedule 12 and explained in Note
14 2 at the bottom of the page. After adjustment, the expected bond yield applicable
15 to a Moody's A rated public utility bond is 7.6% as shown on Line No. 3, page 1 of
16 Schedule 12.

17 Adjustments of 0.028% and 0.057%, rounded to 0.0% and 0.1% (see
18 Notes 3 and 4 on page 1 of Schedule 12) to reflect the Moody's average A1/A2
19 and average A1 bond ratings of each proxy group, respectively, to the expected
20 yield of 7.6% on A rated public utility bonds are needed. Therefore, the expected
21 proxy group specific bond yield is 7.6% for the proxy group of nine C.A. Turner
22 water companies and 7.5% for the proxy group of four Value Line water
23 companies.

24 3. Estimation of the Equity Risk Premium

25 Q. Please explain the method utilized to estimate the equity risk premium.
26
27

1 A. I evaluated the results of two different historical equity risk premium studies, as
2 well as Value Line's forecasted total annual return on the market over the
3 prospective yield on high grade corporate bonds, as detailed on pages 5, 6 and 8
4 of Exhibit No. ___ (PMA-1), Schedule 12. As shown on Line No. 3, page 5 of
5 Schedule 12, the mean equity risk premium based on both of the studies is 5.2%
6 applicable to both proxy groups of water companies. This estimate is the result of
7 an average of beta-derived historical equity risk premium and a forecasted total
8 market equity risk premium as well as the mean historical equity risk premium
9 applicable to public utilities with bonds rated A based upon holding period returns.

10 The basis of the beta-derived equity risk premiums applicable to the proxy
11 groups is shown on page 6 of Exhibit No. ___ (PMA-1), Schedule 12. Beta-
12 determined equity risk premiums should receive substantial weight because betas
13 are derived from the market prices of common stocks over a recent five-year
14 period. Beta is a meaningful measure of prospective relative risk to the market as
15 a whole and is a logical means by which to allocate a relative share of the
16 market's total equity risk premium.

17 The total market equity risk premium utilized was 8.6% and is based upon
18 an average of both the long-term historical and forecasted market risk premiums
19 of 7.0% and 10.1%, respectively, as shown on page 6 of Exhibit No. ___ (PMA-1),
20 Schedule 12. To derive the historical market equity risk premium, I used the most
21 recent Ibbotson Associates' data on holding period returns for the S&P 500
22 Composite Index and Salomon Brothers Long-term High-grade Corporate Bond
23 Index covering the period 1926-2000. The use of holding period returns over a
24 very long period of time is useful in the beta approach. As Ibbotson Associates²¹
25 Valuation Edition 2001 Yearbook states:
26

21

Ibbotson Associates, Stocks, Bonds, Bills and Inflation – Valuation Edition 2000 Yearbook, p. 66-67.

1 The estimate of the equity risk premium depends on the length of
2 the data series studied. A proper estimate of the equity risk
3 premium requires a data series long enough to give a reliable
4 average without being unduly influenced by very good and very
5 poor short-term returns. When calculated using a long data series,
6 the historical equity risk premium is relatively stable.⁴
7 Furthermore, because an average of the realized equity risk
8 premium is quite volatile when calculated using a short history,
9 using a long series makes it less likely that the analyst can justify
10 any number he or she wants. The magnitude of how shorter
11 periods can affect the result will be explored later in this chapter.

12
13 Some analysts estimate the expected equity risk premium using a
14 shorter, more recent time period on the basis that recent events
15 are more likely to be repeated in the near future; furthermore, they
16 believe that the 1920s, 1930s and 1940s contain too many
17 unusual events. This view is suspect because all periods contain
18 "unusual" events. Some of the most unusual events this century
19 took place quite recently, including the inflation of the late 1970s
20 and early 1980s, the October 1987 stock market crash, the
21 collapse of the high-yield bond market, the major contraction and
22 consolidation of the thrift industry, the collapse of the Soviet Union,
23 and the development of the European Economic Community – all
24 of these happened in the last 20 years.

25
26 It is even difficult for economists to predict the economic
27 environment of the future. For example, if one were analyzing the
28 stock market in 1987 before the crash, it would be statistically
29 improbable to predict the impending short-term volatility without
30 considering the stock market crash and market volatility of the
31 1929-1931 period.

32
33 Without an appreciation of the 1920s and 1930s, no one would
34 believe that such events could happen. The 75-year period
35 starting with 1926 is representative of what can happen: it
36 includes high and low returns, volatile and quiet markets, war and
37 peace, inflation and deflation, and prosperity and depression.
38 Restricting attention to a shorter historical period underestimates
39 the amount of change that could occur in a long future period.
40 Finally, because historical event-types (not specific events) tend to
41 repeat themselves, long-run capital market return studies can
42 reveal a great deal about the future. Investors probably expect
43 "unusual" events to occur from time to time, and their return
44 expectations reflect this. (footnotes omitted)

45
46 In addition, the use of long-term data in a RPM model is consistent with

1 the long-term investment horizon presumed by the DCF model. Consequently,
2 the long-term arithmetic mean total return rates on the market as a whole of
3 13.0% and on corporate bonds of 6.0% were used, as shown at Line Nos. 1 and 2
4 of page 6 of Exhibit No. __ (PMA-1), Schedule 12. As shown on Line No. 3 of
5 page 6, the resultant long-term historical equity risk premium on the market as a
6 whole is 7.0%.

7 I used arithmetic mean return rates because they are appropriate for cost
8 of capital purposes. As Ibbotson Associates state in their Valuation Edition 2001
9 Yearbook²²:

10 The equity risk premium data presented in this book are arithmetic
11 average risk premia as opposed to geometric average risk premia.
12 The arithmetic average equity risk premium can be demonstrated
13 to be most appropriate when discounting future cash flows. For
14 use as the expected equity risk premium in either the CAPM or the
15 building block approach, the arithmetic mean or the simple
16 difference of the arithmetic means of stock market returns and
17 riskless rates is the relevant number. This is because both the
18 CAPM and the building block approach are additive models, in
19 which the cost of capital is the sum of its parts. The geometric
20 average is more appropriate for reporting past performance, since
21 it represents the compound average return.

22
23 The argument for using the arithmetic average is quite
24 straightforward. In looking at projected cash flows, the equity risk
25 premium that should be employed is the equity risk premium that is
26 expected to actually be incurred over the future time periods.
27 Graph 4-3 shows the realized equity risk premium for each year
28 based on the returns of the S&P 500 and the income return on
29 long-term government bonds. (The actual, observed difference
30 between the return on the stock market and the riskless rate is
31 known as the realized equity risk premium.) There is considerable
32 volatility in the year-by-year statistics. A times the realized equity
33 risk premium is even negative.

34
35 As Ibbotson Associates²³ states in their 1999 Yearbook:

²² Id., p. 61.

²³ Ibbotson Associates, Stocks, Bonds, Bills and Inflation - 1999 Yearbook, pp. 157-158.

1
2 The expected equity risk premium should always be calculated
3 using the arithmetic mean. The arithmetic mean is the rate of
4 return which, when compounded over multiple periods, gives the
5 mean of the probability distribution of ending wealth
6 values....Stated another way, the arithmetic mean is correct
7 because an investment with uncertain returns will have a higher
8 expected ending wealth value than an investment which earns,
9 with certainty, its compound or geometric rate of return every
10 year....*Therefore, in the investment markets, where returns are*
11 *described by a probability distribution, the arithmetic mean is the*
12 *measure that accounts for uncertainty, and is the appropriate one*
13 *for estimating discount rates and the cost of capital. (italics added)*
14

15 Ex-post (historical) total returns and equity risk premium spreads differ in
16 size and direction over time. This is precisely why the arithmetic mean is
17 important as it provides insight into the variance and standard deviation of returns.
18 This prospect for variance, as captured in the arithmetic mean, provides the
19 valuable insight needed by investors to estimate future risk when making a current
20 investment. Absent such valuable insight into the potential variance of returns,
21 investors cannot meaningfully evaluate prospective risk. As discussed previously,
22 all of the cost of common equity models, including the DCF, are premised upon
23 the EMH, that all publicly available information is reflected in the market prices
24 paid. If investors relied upon the geometric mean of ex-post spreads, they would
25 have no insight into the potential variance of future returns because the geometric
26 mean relates the change over many periods to a constant rate of change, thereby
27 obviating the year-to-year fluctuations, or variance, *critical to risk analysis*.

28 The basis of the forecasted market equity risk premium can be found on
29 Line Nos. 4 through 6 on page 6 of Exhibit No. __ (PMA-1), Schedule 12. It is
30 derived from an average of the most recent 12-month, 6-month, 3-month (using
31 the months of December 2000 through November 2001) and a recent spot
32 (December 21, 2001) median market price appreciation potentials by Value Line
33 as explained in detail in Note 1 on page 4 of Exhibit No. __ (PMA-1), Schedule 13.

1 The average expected price appreciation is 76% which translates to 15.18% per
2 annum and, when added to the average (similarly calculated) dividend yield of
3 1.93% equates to a forecasted annual total return rate on the market as a whole
4 of 17.11%, rounded to 17.1%. Thus, this methodology is consistent with the use
5 of the 12-month, 6-month, 3-month and spot dividend yields in my application of
6 the DCF model. To derive the forecasted total market equity risk premium of
7 10.1% shown on Exhibit No. __ (PMA-1), Schedule 12, page 6, Line No. 6, the
8 December 1, 2001 forecast of about 50 economists of the expected yield on
9 Moody's Aaa rated corporate bonds for the six calendar quarters ending with the
10 first calendar quarter 2003 of 7.0% from Blue Chip Financial Forecasts was
11 deducted from the Value Line total market return of 17.1%. The calculation
12 resulted in an expected market risk premium of 10.1%.

13 The average of the historical and projected market equity risk premiums of
14 7.0% and 10.1% is 8.55% rounded to 8.6%.

15 On page 9 of Exhibit No. __ (PMA-1), Schedule 12, the most current
16 Value Line (Standard Edition) betas for the companies in each proxy group are
17 shown. Applying the average beta to the average market equity risk premium of
18 8.6% for the nine C.A. Turner water companies and the proxy group of four Value
19 Line water companies results on a beta adjusted equity risk premium of 5.2% for
20 both proxy groups as shown on Exhibit No. __ (PMA-1), Schedule 12, page 6,
21 Line No. 9.

22 A mean equity risk premium of 5.2% applicable to companies with A rated
23 public utility bonds was calculated based upon holding period returns from a study
24 using public utilities, as shown on Line No. 2, page 5 of Exhibit No. __ (PMA-1),
25 Schedule 12, and detailed on page 8 of the same schedule.

26 The equity risk premiums applicable to the proxy group of nine C.A. Turner
27 water companies and to the proxy group of four Value Line is the average of the

1 beta-derived premium and that based upon the holding period returns of public
2 utilities with A rated bonds, as summarized on Exhibit No. __ (PMA-1), Schedule
3 12, page 5, i.e., 5.2%.

4
5 Q. What are the RPM calculated common equity cost rates?

6
7 A. They are 12.8% for the nine C.A. Turner water companies and 12.7% for the
8 proxy group of four Value Line water companies on Exhibit No. __ (PMA-1),
9 Schedule 12, page 1.

10
11 Q. Some critics of the RPM model claim that its weakness is that it presumes a
12 constant equity risk premium. Is such a claim valid?

13
14 A. No. The equity risk premium varies inversely with interest rate changes, although
15 not in tandem with those changes. This presumption of a constant equity risk
16 premium is no different than the presumption of a constant "g", or growth
17 component, in the DCF model. If one calculates a DCF cost rate today, the
18 absolute result "k", as well as the growth component "g", would invariably differ
19 from a calculation made just one or several months earlier. This implies that the
20 "g" does change, although in the application of the standard DCF model, the "g" is
21 presumed to be constant. Hence, there is no difference between the RPM and
22 DCF models in that both models assume a constant component, but in reality,
23 these components, the "g" and the equity risk premium both change.

24 As Morin²⁴ states with respect to the DCF model:

25 It is not necessary that *g* be constant year after year to make the
26

²⁴ Id., p. 111.

1 model valid. *The growth rate may vary randomly around some*
2 *average expected value. Random variations around trend are*
3 *perfectly acceptable, as long as the mean expected growth is*
4 *constant.* The growth rate must be 'expectationally constant' to
5 use formal statistical jargon. (italics added)
6

7 The foregoing confirms that the RPM is similar to the DCF model. Both assume
8 an "expectationally constant" risk premium and growth rate, respectively, but in
9 reality both vary (change) randomly around an arithmetic mean. Consequently,
10 the use of the arithmetic mean, and not the geometric mean is confirmed as
11 appropriate in the determination of an equity risk premium as discussed
12 previously.
13

14 D. The Capital Asset Pricing Model (CAPM)

15 1. Theoretical Basis

16 Q. Please explain the theoretical basis of the CAPM.

17
18 A. CAPM theory defines risk as the covariability of a security's returns with the
19 market's returns. This covariability is measured by beta (" β "), an index measure
20 of an individual security's variability relative to the market. A beta less than 1.0
21 indicates lower variability while a beta greater than 1.0 indicates greater variability
22 than the market.

23 The CAPM assumes that all other risk, i.e., all non-market or unsystematic
24 risk, can be eliminated through diversification. The risk that cannot be eliminated
25 through diversification is called market, or systematic, risk. The CAPM presumes
26 that investors require compensation for risks that cannot be eliminated through
27 diversification. Systematic risks are caused by macroeconomic and other events
28 that affect the returns on all assets. Essentially, the model is applied by adding a
29 risk-free rate of return to a market risk premium. This market risk premium is
30 adjusted proportionately to reflect the systematic risk of the individual security

relative to the market as measured by beta. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where:

R_s	=	Return rate on the common stock
R_f	=	Risk-free rate of return
R_m	=	Return rate on the market as a whole
β	=	Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have confirmed its validity. These tests have measured the extent to which security returns and betas are related as predicted by the CAPM. However, Morin observes that while the results support the notion that beta is related to security returns, it has been determined that the empirical Security Market Line (SML) described by the CAPM is not as steeply sloped as the predicted SML. Morin²⁵ states:

With few exceptions, the empirical studies agree that the implied intercept term exceeds the risk-free rate and the slope term is less than predicted by the CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.

* * *

Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x \beta(R_M - R_F) + (1-x) \beta(R_M - R_F)$$

where x is a fraction to be determined empirically. ...the value of x that best explains the observed relationship is between 0.25 and 0.30. If $x = 0.25$, the equation becomes:

²⁵ Id., at p. 321.

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$$K = R_F + 0.25(R_M - R_F) + 0.75 \beta(R_M - R_F)^{26}$$

In view of theory and practical research, I have applied both the traditional CAPM and the empirical CAPM to the companies in the proxy group and averaged the results.

2. Risk-Free Rate of Return

Q. Please describe your selection of a risk-free rate of return.

A. My applications of the traditional and empirical CAPM are summarized on Exhibit No. __ (PMA-1), Schedule 13, page 1. As shown on Line Nos. 1 and 4, the risk-free rate adopted for both applications is 5.4%. It is based upon the average consensus forecast of the reporting economists in the December 1, 2001 of Blue Chip Financial Forecasts as shown in Note 2, page 4, of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the first calendar quarter 2003.

Q. Why is the prospective yield on 30-year U.S. Treasury Bonds appropriate for use as the risk-free rate?

A. The yield on 30-year T-Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A rated public utility bonds, and is consistent with the long-term investment horizon inherent in utilities' common stocks. Therefore, it is consistent with the long-term investment horizon presumed in the standard DCF model employed in regulatory ratemaking. Moreover, Morin²⁷ states:

²⁶ Id., at pp. 335-336.

²⁷ Id., at p. 308.

1
2 Equity investors generally have an investment horizon far in
3 excess of ninety days. More importantly, the short-term T-bill
4 yields reflect the impact of factors different from those influencing
5 long-term securities, such as common stock. For example, the
6 premium for expected inflation absorbed into 90-day Treasury bills
7 is likely to be far different than the inflationary premium absorbed
8 into long-term securities yields. The yields on long-term Treasury
9 bonds match more closely with common stock returns. *For*
10 *investors with a long time horizon, a long-term government bond is*
11 *almost risk-free.* (italics added)
12

13 As to the use of the highly volatile Treasury Bill rate, Morin cites Brigham
14 and Gapenski who conclude²⁸:

15
16 Treasury bill rates are subject to more random disturbances than
17 are Treasury bond rates. For example, bills are used by the
18 Federal Reserve System to control the money supply, and bills are
19 also used by foreign governments, firms, and individuals as a
20 temporary safe-house for money. Thus, if the Fed decides to
21 stimulate the economy, it drives down the bill rate and the same
22 thing happens if trouble erupts somewhere in the world and money
23 flows into the United States seeking a temporary haven.
24

25 In addition, Ibbotson Associates note in their Valuation Edition 2001
26 Yearbook²⁹

27
28 The horizon of the chosen Treasury security should match the
29 horizon of whatever is being valued. When valuing a business
30 that is being treated as a going concern, the appropriate Treasury
31 yield should be that of a long-term Treasury bond. Note that the
32 horizon is a function of the investment, not the investor.
33
34

35 In conclusion, the average expected yield on 30-year Treasury Bonds is
36 the appropriate proxy for the risk-free rate in the CAPM because it is less volatile

²⁸ Id., at p. 308.

²⁹ Id., p. 43.

1 than yields on Treasury Bills, is almost risk-free as noted by Morin above and is
2 consistent with the long-term investment horizon implicit in common stocks.

3
4 3. Market Equity Risk Premium

5 Q. Please explain the estimation of the expected equity risk premium for the market.

6
7 A. First, I estimate investors' expected total return rate for the market. Then I
8 estimate the expected risk-free rate which I subtract from the expected total return
9 rate for the market. The result is an expected equity risk premium for the market,
10 some proportion of which must be allocated to the companies in the proxy group
11 through the use of beta. As a measure of risk relative to the market as a whole,
12 the beta is an appropriate means by which to apportion the market risk premium
13 to a specific company or group.

14 As shown on Exhibit No. __ (PMA-1), Schedule 13, page 1, Line No. 2,
15 the proportional market equity risk premium, based on the traditional CAPM, is
16 5.9% for both proxy group of nine C.A. Turner water companies and the proxy
17 group of four Value Line water companies. Applying the empirical CAPM results
18 in an equity risk premium of 6.9% for the nine C.A. Turner water companies and
19 the four Value Line water companies as shown on Line No. 5 on page 1 of
20 Schedule 13. The total market equity risk premium utilized was 9.8% and is
21 based upon an average of the long-term historical and projected market risk
22 premiums.

23 The basis of the projected median market equity risk premium is explained
24 in detail in Note 1 on page 4 of Exhibit No. __ (PMA-1), Schedule 13. As
25 previously discussed, it is derived from an average of the most recent 12-month,
26 6-month, 3-month (using the months of December 2000 through November 2001)
27 and a recent spot (December 21, 2001) 3 - 5 year median total market price

1 appreciation projections from Value Line and the long-term historical average from
2 Ibbotson Associates. The appreciation projections by Value Line plus average
3 dividend yield equate to a forecasted annual total return rate on the market of
4 17.1%. The long-term historical return rate of 13.0% on the market as a whole is
5 from Ibbotson Associates' Stocks, Bonds, Bills and Inflation - Valuation Edition
6 2001 Yearbook. In each instance, the relevant risk-free rate was deducted from
7 the total market return rate. For example, from the Value Line projected total
8 market return of 17.1%, the forecasted average risk-free rate of 5.4% was
9 deducted indicating a forecasted market risk premium of 11.7%. From the
10 Ibbotson Associates' long-term historical total return rate of 13.0%, the long-term
11 historical income return rate on long-term U.S. Government Securities of 5.2%
12 was deducted indicating an historical equity risk premium of 7.8%. Thus, the
13 average of the projected and historical total market risk premiums of 11.7% and
14 7.8%, respectively, is 9.75%, rounded to 9.8%.

15
16 Q What is the result of your applications of the traditional and empirical CAPM to the
17 proxy group?

18
19 A. As shown on Exhibit No. __ (PMA-1), Schedule 13, Line No. 3 of page 1, the
20 traditional CAPM cost rate is 11.3% for both the proxy group of nine C.A. Turner
21 water companies and the four Value Line water companies. And, as shown on
22 Line No. 6 of page 1, the empirical CAPM cost rate is 12.3% for both proxy
23 groups. The traditional and empirical CAPM cost rates are shown individually by
24 company on pages 2 and 3 of Exhibit No. __ (PMA-1), Schedule 13. As shown on
25 Line No. 7, the CAPM cost rate applicable to both proxy groups is 11.8% based
26 upon the traditional and empirical CAPM results.

1 E. Comparable Earnings Model (CEM)

2 1. Theoretical Basis

3 Q. Please describe your application of the Comparable Earnings Model and how it is
4 used to determine common equity cost rate.

5
6 A. My application of the CEM is summarized in Exhibit No. __ (PMA-1), Schedule 14
7 which consists of two pages. Page 1 shows the CEM results for both proxy group
8 of nine C.A. Turner water companies and the proxy group of four Value Line water
9 companies. Page 2 contains the notes related to page 1.

10 The comparable earnings approach is derived from the "corresponding
11 risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, it is
12 consistent with the Hope doctrine that the return to the equity investor should be
13 commensurate with returns on investments in other firms having corresponding
14 risks.

15 The CEM is based upon the fundamental economic concept of opportunity
16 cost which maintains that the true cost of an investment is equal to the cost of the
17 best available alternative use of the funds to be invested. The opportunity cost
18 principle is also consistent with one of the fundamental principles upon which
19 regulation rests: that regulation is intended to act as a surrogate for competition
20 and to provide a fair rate of return to investors.

21 The CEM is designed to measure the returns expected to be earned on
22 the book common equity, in this case net worth, of similar risk enterprises. Thus,
23 it provides a direct measure of return, since it translates into practice the
24 competitive principle upon which regulation rests. In my opinion, it is inappropriate
25 to use the achieved returns of regulated utilities of similar risk because to do so
26 would be circular and inconsistent with the principle of equality of risk with non-
27 price regulated firms.

The difficulty in application of the CEM is to select a proxy group of companies which are similar in risk, but are not price regulated utilities. Consequently, the first step in determining a cost of common equity using the comparable earnings model is to choose an appropriate proxy group of non-price regulated firms. The proxy group should be broad-based in order to obviate any company-specific aberrations. As stated previously, utilities need to be eliminated to avoid circularity since the returns on book common equity of utilities are substantially influenced by regulatory awards and are therefore not representative of the returns that could be earned in a truly competitive market.

2. Application of the CEM

Q. Please describe your application of the CEM.

A. My application of the CEM is market-based in that the selection of non-price regulated firms of comparable risk is based upon statistics derived from the market prices paid by investors.

I have chosen a proxy group of forty-four domestic, non-price regulated firms to reflect both the systematic and unsystematic risks of both the proxy group of nine C.A. Turner water companies and the proxy group of four Value Line water companies, since their selection criteria are identical. The proxy group of forty-four non-utility companies is listed on page 1 of Exhibit No. __ (PMA-1), Schedule 14. The criteria used in the selection of these proxy companies were that they be domestic non-utility companies and have a rate of return on net worth, common equity or partners' capital reported in Value Line (Standard Edition) less than 20.0% for each of the five years ended 2000, or projected for 2004-2006. Value Line betas were used as a measure of systematic risk. The residual standard error, or the standard error of the estimate from the regression equation from

1 which each company's beta was derived, was used as a measure of each firm's
2 specific, i.e., unsystematic risk. The residual standard error reflects the extent to
3 which events specific to a company's operations will affect its stock price and,
4 therefore, is a measure of diversifiable, unsystematic, company-specific risk. *In*
5 *essence, companies which have similar betas and residual standard errors, have*
6 *similar investment risk, i.e., the sum of systematic (market) risk as reflected by*
7 *beta and unsystematic (business and financial) risk, as reflected by the residual*
8 *standard error, respectively. Those statistics are derived from regression*
9 *analyses using market prices which, under the EMH reflect all relevant risks. The*
10 *application of these criteria results in a proxy group of non-price regulated firms*
11 *similar in risk to the average company in both proxy groups.*

12 The proxy group of forty-four non-price regulated companies were chosen
13 based upon ranges of unadjusted beta and residual standard error. The ranges
14 were based upon the average standard deviations of the unadjusted beta and the
15 average residual standard error for the proxy group of nine C.A. Turner water
16 companies and the proxy group of four Value Line water companies.

17 The water companies in both proxy groups have an average unadjusted
18 beta of 0.36 whose standard deviation is 0.1127 as of December 14, 2001, as
19 shown in Note 4, page 2 of Exhibit No. __ (PMA-1), Schedule 14. The average
20 residual standard error from the regression equations which derived the proxy
21 groups' average unadjusted beta is 3.9785 as shown on Schedule 14, page 1 with
22 a standard deviation of 0.1748 as derived in Note 5, page 2 of Exhibit No. __
23 (PMA-1), Schedule 14. Ranges of unadjusted betas from 0.02 to 0.70 and of
24 residual standard errors from 3.4541 to 4.5029 were used to select the proxy
25 group of forty-four domestic non-utility companies comparable to the profile of
26 both proxy groups of water companies as can be gleaned from page 1 and
27 explained in Note 1 on page 2 of Schedule 14. These ranges are based upon the

1 proxy groups' average unadjusted beta of 0.36 and average residual standard
2 error of 3.9785 plus or minus three standard deviations of beta ($0.1127 \times 3 =$
3 0.3381) and residual standard errors ($0.1748 \times 3 = 0.5244$). The use of three
4 standard deviations assures capturing 99.73% of the distribution of unadjusted
5 betas and standard errors, assuring comparability.

6 I believe that this methodology for selecting non-price regulated firms of
7 similar total risk (i.e., non-diversifiable systematic and diversifiable non-systematic
8 risk) is meaningful and effectively responds to the criticisms normally associated
9 with the selection of firms presumed to be comparable in total risk. This is
10 because the selection of non-price regulated companies comparable in total risk is
11 based upon regression analyses of market prices which reflect investors'
12 assessment of all risks, diversifiable and non-diversifiable. Thus, the empirical
13 selection process results in companies comparable in both systematic and
14 unsystematic risks, i.e., total risk.

15 Once a proxy group of non-price regulated companies is selected, it is
16 then necessary to derive returns on book common equity, net worth or partners'
17 capital for the companies in the group. I have measured these returns using the
18 rate of return on net worth, common equity or partners' capital reported by Value
19 Line (Standard Edition). It is reasonable to measure these returns over both the
20 most recent historical five-year period as well as those projected over the ensuing
21 five-year period.

22
23 Q. What is your conclusion of CEM cost rate?

24
25 A. My conclusion of CEM cost rate is 12.5% for both the proxy group of nine C.A.
26 Turner water companies and the proxy group of four Value Line water companies
27 as shown on page 1 of Schedule 14 of Exhibit No. __ (PMA-1).

XI. CONCLUSION OF COMMON EQUITY COST RATE RANGE

Q. What is your recommended common equity cost rate range?

A. It is 12.00% to 12.50% based upon common equity cost rates resulting from all four cost of common equity models consistent with the EMH which logically mandates the use of multiple cost of common equity models as adjusted for United's greater investment risk. The results of the four cost of common equity models applied to the proxy group of nine C.A. Turner water companies and the proxy group of four Value Line water companies is shown on Exhibit No. __ (PMA-1), Schedule 1, page 2 and summarized below:

Table 5

	<u>Proxy Group of Nine C.A. Turner Water Companies</u>	<u>Proxy Group of Four Value Line Water Companies</u>
Discounted Cash		
Flow Model	8.8%	9.4%
Risk Premium Model	12.8	12.7
Capital Asset Pricing		
Model	11.8	11.8
Comparable Earnings		
Model	<u>12.5</u>	<u>12.5</u>
Average	11.5%	11.6%
Business Risk Adjustment	<u>0.75</u>	<u>0.75</u>
Cost Rate	<u>12.25%</u>	<u>12.35%</u>
Recommended Range	<u>12.00% - 12.50%</u>	

Based upon the common equity cost rate results shown on page 2 of Schedule 1 and Table 4, I conclude that a common equity cost rate of 11.5% is indicated for the proxy group of nine C.A. Turner water companies and of 11.6%

1 for the proxy group of four Value Line water companies based upon the use of
2 multiple common equity cost rate models, as shown on Line No. 5, page 3 of
3 Schedule 1 of Exhibit No. __ (PMA-1). These cost rates are applicable to the
4 much larger, less business risky, proxy groups of nine C.A. Turner water
5 companies and four Value Line water companies as shown on Line No. 5 of
6 Exhibit No. __ (PMA-1), Schedule 1, page 2.

7 However, as discussed previously, United is more business risky than the
8 average proxy group company because of its small size vis-à-vis the two proxy
9 groups. Therefore, it is necessary to upwardly adjust the 11.5% and 11.6%
10 indicated common equity cost rates based upon each proxy group, respectively.
11 Based upon United's small relative size and negative earnings history, I have
12 added a business risk adjustment of 0.75% (75 basis points) which is
13 conservatively realistic. The adjustment is based upon data contained in Chapter
14 6 entitled "Firm Size and Return" from Ibbotson Associates' Stocks, Bonds, Bills
15 and Inflation-Valuation Edition 2001 Yearbook. The determinations are based on
16 the size premiums for decile portfolios of New York Stock Exchange (NYSE),
17 American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-
18 2000 period and related data shown on pages 4 through 10 of Schedule 1 of
19 Exhibit No. __ (PMA-1). The average size premiums for the deciles in which the
20 proxy groups of water companies fall have been compared to the average size
21 premiums for the 10th decile in which United would clearly fall, if its stock were
22 traded and sold at the December 20, 2001 average market/book ratio of 237.0%
23 experienced by the two proxy groups. As shown on page 4 of Schedule 1 of
24 Exhibit No. __ (PMA-1), the size premium spread between the proxy groups and
25 United is in the range of approximately 3.60% to 4.00%. Thus, 0.75% is a
26 conservatively reasonable estimate to reflect the business risk differential between
27 United and the two proxy groups. Page 5 contains notes relative to page 4. Page

6 contains data in support of page 4 while pages 7 through 10 of Schedule 1 contain relevant information from the Ibbotson Associates' Valuation Edition 2001 Yearbook discussed previously.

Consequently, as shown on page 2 of Schedule 1 of Exhibit No. __ (PMA-1) at Line No. 8 and Table 4 above, the point estimates of the common equity cost rate, including the business adjustment based upon United's greater relative business risk are 12.25% to 12.35%. However, as indicated previously, after reviewing the results of all four cost of common equity models applied to the market data of both proxy groups and keeping in mind that rate of return analysis involves a significant amount of informed expert judgment, my recommended common equity cost rate range, applicable to United, is 12.00% to 12.50%, based upon the risk adjusted indicated common equity cost rates of 12.25% and 12.35% for each proxy group of water companies. In my opinion, such a range is both reasonable and conservative.

XII. CHECK ON THE REASONABLENESS OF YOUR RECOMMENDED COMMON EQUITY COST RATE RANGE

Q. How does interest coverage affect the cost rate of common equity capital?

A. Interest coverage is defined as the number of times annual interest on debt has been earned before income taxes. It is the relationship between the income available to pay interest charges and total interest charges. Earnings available for common equity and income taxes provide the margin by which fixed charges are covered more than one time. Investors use coverage as a tool to measure the relative safety of their investment.

Q. What is the implicit opportunity to United to earn pretax interest coverage based

1 on an overall cost of capital range of 10.31% to 10.56% employing a common
2 equity cost rate range relative to 49.92% common equity ratio?

3
4 A. My recommendation affords United an opportunity to cover interest charges of
5 3.21 to 3.30 times before income taxes as shown on Schedule 1, page 1 of Exhibit
6 No. ___ (PMA-1). An opportunity for pretax interest coverage of 3.21 to 3.30 times
7 is before the impact of attrition. After the impact of attrition, such an opportunity,
8 in my opinion, would result in an achieved pretax interest coverage lower than
9 3.21 to 3.30 times.

10
11 Q. Please discuss the Company's opportunity for pretax interest coverage of 3.21 to
12 3.30 times.

13
14 A. United's implicit opportunity to earn pretax interest coverage of 3.21 to 3.30 times
15 falls near the midpoint of the range of S&P's revised utility financial target pretax
16 interest coverage ratios of 2.8 to 3.4 times (see page 12 of Schedule 2) required
17 of a utility in the A bond rating category and assigned a business position of "3",
18 the average bond rating and S&P business position of the proxy group of nine
19 C.A. Turner water companies. In addition, an opportunity for 3.21 to 3.30 times
20 pretax interest coverage falls below the midpoint of S&P's range of pretax interest
21 coverage ratios of 2.8 to 4.0 times required of a utility with bonds rated AA-/A+
22 and assigned a business position of "3", such as the proxy group of four Value
23 Line water companies.

24
25 Q. Does that conclude your direct testimony?

26
27 A. Yes.

APPENDIX A

PROFESSIONAL QUALIFICATIONS

OF

**PAULINE M. AHERN, VICE PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES**

**PROFESSIONAL QUALIFICATIONS
OF
PAULINE M. AHERN
AUS CONSULTANTS - UTILITY SERVICES**

PROFESSIONAL EXPERIENCE

1996-Present

As a Vice President, I continue to prepare fair rate of return and cost of capital exhibits, as well as submitting testimony on same before state public utility commissions. I continue to provide assistance and support throughout the entire ratemaking litigation process.

As the Publisher of C.A. Turner Utility Reports, I am responsible for the production, publishing, and distribution of the reports. C.A. Turner Utility Reports provides financial data and related ratios for about 200 public utilities, i.e., electric, combination gas and electric, natural gas distribution, natural gas transmission, telephone, and water utilities, on a monthly, quarterly and annual basis. C.A. Turner Utility Reports has about 1,000 subscribers including utilities, many state regulatory commissions, federal agencies, individuals, brokerage firms, attorneys, as well as public and academic libraries. The publication has continuously provided financial statistics on the utility industry since 1930.

As the Publisher of C.A. Turner Utility Reports, I supervise the production, publishing, and distribution of the AGA Rate Service publications under license from the American Gas Association. I am also responsible for maintaining and calculating the performance of the AGA Index, a market capitalization weighted index of the common stocks of the approximately 90 corporate members of the AGA. In addition, I supervise the production of a quarterly survey of investor-owned water company rate case activity on behalf of the National Association of Water Companies.

1994-1996

As an Assistant Vice President, I prepared fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. These supporting exhibits include the determination of an appropriate ratemaking capital structure and the development of embedded cost rates of senior capital. The exhibits also support the determination of a recommended return on common equity through the use of various market models, such as, but not limited to, Discounted Cash Flow analysis, Capital Asset Pricing Model and Risk Premium Methodology, as well as an assessment of the risk characteristics of the client utility. I also assisted in the preparation of responses to any interrogatories received regarding such testimonies filed on behalf of client utilities. Following the filing of fair rate of return testimonies, I assisted in the evaluation of opposition testimony in order to prepare interrogatory questions, areas of cross-examination, and rebuttal testimony. I also evaluated and assisted in the preparation of briefs and exceptions following the hearing process. I have submitted testimony before state public utility commissions regarding appropriate capital structure ratios and fixed capital cost rates.

1990-1994

As a Senior Financial Analyst, I prepared and supervised two analysts in the preparation of fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. The team also assisted in the preparation of interrogatory responses.

I evaluated the final orders and decisions of various commissions to determine whether further actions are warranted and to gain insight which may assist in the preparation of future rate of return studies.

I assisted in the preparation of an article authored by Frank J. Hanley and A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" published in the July 15, 1991 issue of Public Utilities Fortnightly.

I co-authored an article with Frank J. Hanley entitled "Comparable Earnings: New Life for an Old Precept" which was published in the American Gas Association's Financial Quarterly Review, Summer 1994.

I was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the National Society of Rate of Return Analysts. This designation is based upon education, experience and the successful completion of a comprehensive examination.

As Administrator of Financial Analysis for C. A. Turner Utility Reports, which reports financial data for over 200 utility companies and has approximately 1,000 subscribers, I oversee the preparation of this monthly publication, as well as the annual publication, Financial Statistics - Public Utilities.

1988-1990

As a Financial Analyst, I assisted in the preparation of fair rate of return studies including capital structure determination, development of senior capital cost rates, as well as the determination of an appropriate rate of return on equity. I also assisted in the preparation of interrogatory responses, interrogatory questions of the opposition, areas of cross-examination and rebuttal testimony. I also assisted in the preparation of the annual publication C.A. Turner Utility Reports - Financial Statistics - Public Utilities.

1973-1975

As a research assistant in the Research Department of the Regional Economics Division of the Federal Reserve Bank of Boston, I was involved in the development and maintenance of econometric models to simulate regional economic conditions in New England in order to study the effects of, among other things, the energy crisis of the early 1970's and property tax revaluations on the economy of New England. I was also involved in the statistical analysis and preparation of articles for the New England Economic Review. Also, I acted as assistant editor for New England Business Indicators.

1972

As a research assistant in the Office of the Assistant Secretary for International Affairs, U.S. Treasury Department, Washington, D.C., I developed and maintained econometric models which simulated the economy of the United States in order to study the results of various alternate foreign trade policies so that national trade policy could be formulated and recommended.

I am also a member of the Society of Utility and Regulatory Financial Analysts (formerly the National Society of Rate of Return Analysts).

Clients Served

I have offered expert testimony before the following commissions:

Arkansas
Delaware
Hawaii
Illinois
Indiana
Maine
Michigan

Missouri
New Jersey
Pennsylvania
South Carolina
Virginia
Washington

I have sponsored testimony on fair rate of return and related issues for:

Carolina Water Service, Inc.
Consumers Illinois Water Company
Consumers Maine Water Company
Consumers New Jersey Water Co.
Emporium Water Company

GTE Hawaiian Telephone Inc.
Long Neck Water Company
Middlesex Water Company
Pinelands Water Company
Pinelands Wastewater Company

Pittsburgh Thermal
Sussex Shores Water Company
Tidewater Utilities, Inc.
United Water Delaware, Inc.

United Water Indiana, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
Western Utilities, Inc.

I have sponsored testimony on capital structure and senior capital cost rates for the following clients:

Alpena Power Company
Arkansas-Western Gas Company
Associated Natural Gas Company

United Water Delaware, Inc.
Washington Natural Gas Company
PG Energy Inc.

I have assisted in the preparation of rate of return studies on behalf of the following clients:

Algonquin Gas Transmission Co.
Arkansas-Louisiana Gas Company
Arkansas Western Gas Company
Artesian Water Company
Associated Natural Gas Company
Atlantic City Electric Company
Bridgeport-Hydraulic Company
Cambridge Electric Light Company
Carolina Power & Light Company
Citizens Gas and Coke Utility
Columbia Gas/Gulf Transmission Companies
Commonwealth Electric Company
Commonwealth Telephone Company
Conestoga Telephone & Telegraph Co.
Connecticut Natural Gas Corporation
Consolidated Gas Transmission Co.
Consumers Power Company
CWS Systems, Inc.
Delmarva Power & Light Company
East Honolulu Community Services, Inc.
Equitable Gas Company
Florida Power & Light Company
Equitrans, Inc.
Gary Hobart Water Company
Gasco, Inc.
GTE Alaska, Inc.
GTE Arkansas, Inc.
GTE California, Inc.
GTE Florida, Inc.
GTE Hawaiian Telephone
GTE North, Inc.
GTE Northwest, Inc.
GTE Southwest, Inc.
Great Lakes Gas Transmission Limited Partnership
Hawaiian Electric Company
Hawaiian Electric Light Company
IES Utilities Inc.
Illinois Power Company
Interstate Power Company
Iowa Electric Light and Power Company
Iowa Southern Utilities Company

North Carolina Natural Gas Corp.
Kentucky-West Virginia Gas Company
Lockhart Power Company
Middlesex Water Company
Milwaukee Metropolitan Sewer District
Mountaineer Gas Company
National Fuel Gas Distribution Corp.
National Fuel Gas Supply Corp.
Newco Waste Systems of New Jersey, Inc.
New Jersey-American Water Company
New Jersey Natural Gas Company
New York-American Water Company
Northumbrian Water Company
Oklahoma Natural Gas Company
Orange and Rockland Utilities
Paiute Pipeline Company
PECO Energy Company
Penn-York Energy Corporation
Pennsylvania-American Water Company
PG Energy Inc.
Philadelphia Electric Company
South Carolina Pipeline Company
Southwest Gas Corporation
Stamford Water Company
Tesoro Alaska Petroleum Company
United Telephone of New Jersey
United Water Arkansas, Inc.
United Water Delaware, Inc.
United Water Idaho, Inc.
United Water Indiana, Inc.
United Water New Jersey, Inc.
United Water New York, Inc.
United Water Pennsylvania, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
Vista-United Telecommunications Corp.
Washington Natural Gas Company
Washington Water Power Corporation
Waste Management of New Jersey - Transfer Station A
Western Reserve Telephone Company
Western Utilities, Inc.

EDUCATION:

1973 - Clark University - B.A. - Honors in Economics

1991 - Rutgers University - M.B.A. - High Honors

PROFESSIONAL AFFILIATIONS:

Society of Utility and Regulatory Financial Analysts

Energy Association of Pennsylvania

National Association of Water Companies

BEFORE THE
PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA
DOCKET NO. 2000-0210-W/S

EXHIBIT
(Consisting of 14 Schedules)

TO ACCOMPANY THE
PREPARED DIRECT TESTIMONY
OF

PAULINE M. AHERN, VICE PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES

ON BEHALF OF
UNITED UTILITY COMPANIES, INC.

CONCERNING
FAIR RATE OF RETURN

JANUARY 2002

United Utility Companies, Inc.
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to the Financial Supporting Schedules
of Pauline M. Ahern

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United Utility Companies, Inc.
Summary of Cost of Capital and Fair Rate of Return
Based on the Actual Consolidated Capital Structure of Utilities, Inc. at December 31, 2000

<u>Type of Capital</u>	<u>Ratios (1)</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>		<u>Before-Income Tax Weighted Cost Rate (2)</u>	
Total Debt	50.08 %	8.62% (1)	4.32%	4.32%	4.32%	4.32%
Common Equity	<u>49.92</u>	12.00% - 12.50% (3)	<u>5.99%</u>	<u>6.24%</u>	<u>9.55%</u>	<u>9.95%</u>
Total	<u>100.00 %</u>		<u>10.31%</u>	- <u>10.56%</u>	<u>13.87%</u>	- <u>14.27%</u>

Before-income tax interest coverage of all
interest charges (13.87% / 4.32%)
and (14.27% / 4.32%)

3.21 x - 3.30 x

- (1) From Exhibit B, page 4 of the Company's Application for Adjustment of Rates and Charges for the Provision of Water and Sewer Service.
- (2) Based upon a combined effective statutory state and federal income tax rate of 37.3%.
- (3) Based upon informed judgment from the entire study, the principal results of which are summarized on page 2 of this Schedule.

United Utility Companies, Inc.
Brief Summary of Common Equity Cost Rate

<u>No.</u>	<u>Principal Methods</u>	<u>Proxy Group of Nine C. A. Turner Water Companies</u>	<u>Proxy Group of Four Value Line Water Companies</u>
1.	Discounted Cash Flow Model (DCF) (1)	8.8 %	9.4 %
2.	Risk Premium Model (RPM) (2)	12.8	12.7
3.	Capital Asset Pricing Model (CAPM) (3)	11.8	11.8
4.	Comparable Earnings Analysis (CEM) (4)	12.5	12.5
5.	Indicated Common Equity Cost Rate before Adjustment for Business Risk	11.5 %	11.6 %
6.	Business Risk Adjustment	<u>0.75 (5)</u>	<u>0.75 (6)</u>
7.	Indicated Common Equity Cost Rate after Adjustment for Business Risk	<u>12.25 %</u>	<u>12.35 %</u>
8.	Recommended Range of Common Equity Cost rate	<u>12.00% - 12.50%</u>	

See page 3 for notes.

United Utility Companies, Inc.
Brief Summary of Common Equity Cost Rate

Notes:

- (1) From Schedule 8.
- (2) From page 1 of Schedule 12.
- (3) From page 1 of Schedule 13.
- (4) From page 1 of Schedule 14.
- (5) The business risk adjustment of 0.75% is based upon the small size and history of negative earnings of United Utility Companies, Inc. vis-à-vis the proxy groups as discussed in Ms. Ahern's accompanying direct testimony. Based upon the studies done by Ibbotson Associates as excerpted on pages 7 through 10 of this Schedule relative to small size premia, Ms. Ahern has determined that a small size equity risk premium of approximately 3.60% is applicable to the Company's small size vis-à-vis the proxy group of nine C. A. Turner water companies. Therefore, in Ms. Ahern's opinion increasing the indicated common equity cost rate based upon the proxy group of nine C. A. Turner water companies by an business risk adjustment of 0.75% is appropriate, if not extremely conservative.
- (6) The business risk adjustment of 0.75% is based upon the small size and history of negative earnings of United Utility Companies, Inc. vis-à-vis the proxy groups as discussed in Ms. Ahern's accompanying direct testimony. Based upon the studies done by Ibbotson Associates as excerpted on pages 7 through 10 of this Schedule relative to small size premia, Ms. Ahern has determined that a small size equity risk premium of approximately 4.00% is applicable to the Company's small size vis-à-vis the proxy group of four Value Line water companies. Therefore, in Ms. Ahern's opinion increasing the indicated common equity cost rate based upon the proxy group of four Value Line water companies by an business risk adjustment of 0.75% is appropriate, if not extremely conservative.

United Utility Companies, Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.		<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6</u>
		Market Capitalization on December 20, 2000 (1) (millions)	Applicable Decile of the NYSE/AMEX/ NASDAQ	Applicable Size Premium		Based upon NYSE Benchmarks (3)	Spread from Applicable Size Premium for United Utility Companies, Inc. (4)	
				Based upon S&P 500 Benchmarks (2)				
1.	<u>United Utility Companies, Inc.</u>	NA (5)	10 (5)	4.63%	(6)	5.01%	(7)	
2.	<u>Proxy Group of Nine C. A. Turner Water Companies</u>	\$807.832	5 - 6 (8)	1.01%	(9)	1.44%	(10)	3.62% 3.57%
3.	<u>Proxy Group of Four Value Line Water Companies</u>	\$1,621.691	4 (11)	0.62%	(12)	1.06%	(13)	4.01% 3.95%

<u>Decile</u>	<u>Number of Companies</u>	<u>Recent Total Market Capitalization (millions)</u>	<u>Recent Average Market Capitalization (millions)</u>
1 - Largest	237	\$11,757,098.230	\$49,608.009
2	262	1,797,427.043	6,860.409
3	285	864,872.122	3,034.639
4	327	546,712.821	1,671.905
5	364	400,422.531	1,100.062
6	412	286,627.260	695.697
7	482	221,635.399	459.824
8	517	137,729.312	266.401
9	869	116,702.549	134.295
10 - Smallest	1927	74,292.170	38.553

See page 5 for notes.

United Utility Companies, Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE

Notes:

- (1) From page 6 of this Schedule.
- (2) From page 9 of this Schedule.
- (3) From page 10 of this Schedule.
- (4) Line No. 1 – Line No. 2 and Line No. 1 – Line No. 3 of Columns 3 and 4, respectively. For example, the 3.62% in Column 5, Line No. 2 is derived as follows: $3.62\% = 4.63\% - 1.01\%$.
- (5) United Utility Companies, Inc. has a negative common equity balance at December 31, 2000 as shown on Schedule A, Application Exhibit B of its Application for Adjustment of Rates and Charges for the Provision of Water and Sewer Service. Therefore, it is not possible to calculate a meaningful estimated market capitalization. The Company's common stock and paid in capital balance was but \$329,941 at December 31, 2000. Hence, it is reasonable to assume that were its common stock publicly traded that the Company's market capitalization would fall in the 10th decile of the NYSE/AMEXNASDAQ which has an average market capitalization of \$38.553 million as shown in the table on the bottom half of page 4 of this Schedule.
- (6) Size premium applicable to the 10th decile of the NYSE/AMEXNASDAQ based upon S&P 500 benchmarks from page 9 of this Schedule.
- (7) Size premium applicable to the 10th decile of the NYSE/AMEXNASDAQ based upon NYSE benchmarks from page 10 of this Schedule.
- (8) With a market capitalization of \$807.832 million, the proxy group of nine C. A. Turner water companies falls between the 5th and 6th deciles of the NYSE/AMEXNASDAQ which have an average market capitalization of \$897.880 million as shown in the table on the bottom half of page 4 of this Schedule.
- (9) Average of size premium applicable to the 5th and 6th deciles of the NYSE/AMEXNASDAQ based upon S&P 500 benchmarks from page 9 of this Schedule. $1.01\% = (0.93\% + 1.08\%) / 2$.
- (10) Average of size premium applicable to the 5th and 6th deciles of the NYSE/AMEXNASDAQ based upon NYSE benchmarks from page 10 of this Schedule. $1.44\% = (1.37\% + 1.50\%) / 2$.
- (11) With a market capitalization of \$1,621.691 million, the proxy group of four Value Line water companies falls in the 4th decile of the NYSE/AMEXNASDAQ which has an average market capitalization of \$1,671.905 million as shown in the table on the bottom half of page 4 of this Schedule.
- (12) Size premium applicable to the 4th decile of the NYSE/AMEXNASDAQ based upon S&P 500 benchmarks from page 9 of this Schedule.
- (13) Size premium applicable to the 4th decile of the NYSE/AMEXNASDAQ based upon NYSE benchmarks from page 10 of this Schedule.

Source of Information: Ibbotson Associates, Stocks, Bonds, Bills and Inflation – Valuation Edition – 2001 Yearbook, Chicago, IL, 2001

United Utility Companies, Inc.
Market Capitalization of United Utility Companies, Inc.
the Proxy Group of Nine C. A. Turner Water Companies and the
Proxy Group of Four Value Line Water Companies

	1	2	3	4	5	6
Company	Common Stock Shares Outstanding at September 30, 2001 (millions)	Book Value per Share at September 30, 2001 (1)	Total Common Equity at September 30, 2001 (millions)	Closing Stock Market Price on December 20, 2001	Market-to-Book Ratio at December 20, 2001 (2)	Market Capitalization on December 20, 2001 (3) (millions)
United Utility Companies, Inc.	NA	NA	NA	NA	237.0 % (4)	NA (5)
Proxy Group of Nine C. A. Turner Water Companies						
American States Water Co.	10,200	\$ 19,274	\$ 196,594	\$ 36,500	189.4 %	\$ 372,300
American Water Works Co., Inc.	99,500	17,553	1,746,520	41,790	238.1	4,158,105
Artesian Resources Inc.	2,000	16,875	33,749	30,000	177.8	60,000
California Water Service Group	15,200	13,072	198,701	25,500	195.1	387,600
Connecticut Water Service, Inc.	7,700	9,103	70,095	31,100	341.6	239,470
Middlesex Water Company	5,100	14,090	71,860	34,246	243.1	174,654
Pennituck Corporation	2,400	12,344	29,626	24,000	194.4	57,600
Philadelphia Suburban Corp.	68,000	6,709	456,207	23,070	343.9	1,568,760
SJW Corporation	3,000	49,907	149,721	84,000	168.3	252,000
Average	23,678	\$ 17,659	\$ 328,119	\$ 36,690	232.4 %	\$ 807,832
Proxy Group of Four Value Line Water Companies						
American States Water Co.	10,200	\$ 19,274	\$ 196,594	\$ 36,500	189.4 %	\$ 372,300
American Water Works Co., Inc.	99,500	17,553	1,746,520	41,790	238.1	4,158,105
California Water Service Group	15,200	13,072	198,701	25,500	195.1	387,600
Philadelphia Suburban Corp.	68,000	6,709	456,207	23,070	343.9	1,568,760
Average	48,225	\$ 14,152	\$ 650,000	\$ 31,715	241.6 %	\$ 1,621,691

NA = Not Available

Notes:

- (1) Column 3 / Column 1.
- (2) Column 4 / Column 2.
- (3) Column 5 * Column 3.
- (4) The market-to-book ratio of United Utility Companies, Inc. at December 20, 2001 is assumed to be equal to the average market-to-book ratio at December 20, 2001 of the two proxy groups.
- (5) It is not possible to calculate an estimated market capitalization for United Utility Companies, Inc. because the Company had negative common equity at December 31, 2000. (See United Utility Companies, Inc.'s Application for Adjustment of Rates and Charges for the Provision of Water and Sewer Service, Schedule A, Application Exhibit B)

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus Data Base
Company Quarterly Forms 10-Q and / or Company Websites
United Utility Companies, Inc.'s Application for Adjustment of Rates and Charges for the Provision of Water and Sewer Service, Schedule A, Application Exhibit B

Stocks, Bonds, Bills,
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75 years. Of course, the proportion of market value represented by the various deciles varies from year to year.

Columns three and four give recent figures on the number of companies and their market capitalization, presenting a snapshot of the structure of the deciles near the end of 2000.

Table 6-1

Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Size and Composition
1926-2000

Decile	Historical Average Percentage of Total Capitalization	Recent Number of Companies	Recent Decile Market Capitalization (in thousands)	Recent Percentage of Total Capitalization
1-Largest	63.13%	237	\$11,757,098,230	72.56%
2	14.07%	262	1,797,427,043	11.09%
3	7.64%	285	864,872,122	5.34%
4	4.78%	327	546,712,821	3.37%
5	3.26%	364	400,422,531	2.47%
6	2.37%	412	286,627,260	1.77%
7	1.72%	482	221,635,399	1.37%
8	1.27%	517	137,729,312	0.85%
9	0.97%	869	116,702,549	0.72%
10-Smallest	0.80%	1,927	74,292,170	0.46%
Mid-Cap 3-5	15.68%	976	1,812,007,474	11.18%
Low-Cap 6-8	5.36%	1,411	645,991,971	3.99%
Micro-Cap 9-10	1.76%	2,796	190,994,719	1.18%

Source: Center for Research in Security Prices, University of Chicago.

Historical average percentage of total capitalization shows the average, over the last 75 years, of the decile market values as a percentage of the total NYSE/AMEX/NASDAQ calculated each year. Number of companies in deciles, recent market capitalization of deciles, and recent percentage of total capitalization are as of September 30, 2000.

Table 6-2 gives the current breakpoints that define the composition of the NYSE/AMEX/NASDAQ size deciles. The largest company and its market capitalization are presented for each decile. Table 6-3 shows the historical breakpoints for each of the three size groupings presented throughout this chapter. Mid-cap stocks are defined here as the aggregate of deciles 3-5. Based on the most recent data (Table 6-2), companies within this mid-cap range have market capitalizations at or below \$4,143,902,000 but greater than \$840,000,000. Low-cap stocks include deciles 6-8 and currently include all companies in the NYSE/AMEX/NASDAQ with market capitalizations at or below \$840,000,000 but greater than \$192,598,000. Micro-cap stocks include deciles 9-10 and include companies with market capitalizations at or below \$192,598,000. The market capitalization of the smallest company included in the micro-capitalization group is currently \$1.5 million.

Firm Size and Return

Table 6-5

Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ 1926-2000

Decile	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate†	Size Premium (Return in Excess of CAPM)
1-Largest	0.91	12.06%	6.84%	7.03%	-0.20%
2	1.04	13.58%	8.36%	8.05%	0.31%
3	1.09	14.16%	8.93%	8.47%	0.47%
4	1.13	14.60%	9.38%	8.75%	0.62%
5	1.16	15.18%	9.95%	9.03%	0.93%
6	1.18	15.48%	10.26%	9.18%	1.08%
7	1.24	15.68%	10.46%	9.58%	0.88%
8	1.28	16.60%	11.38%	9.91%	1.47%
9	1.34	17.39%	12.17%	10.43%	1.74%
10-Smallest	1.42	20.90%	15.67%	11.05%	4.63%
Mid-Cap, 3-5	1.12	14.46%	9.23%	8.65%	0.58%
Low-Cap, 6-8	1.22	15.75%	10.52%	9.45%	1.07%
Micro-Cap, 9-10	1.36	18.41%	13.18%	10.56%	2.62%

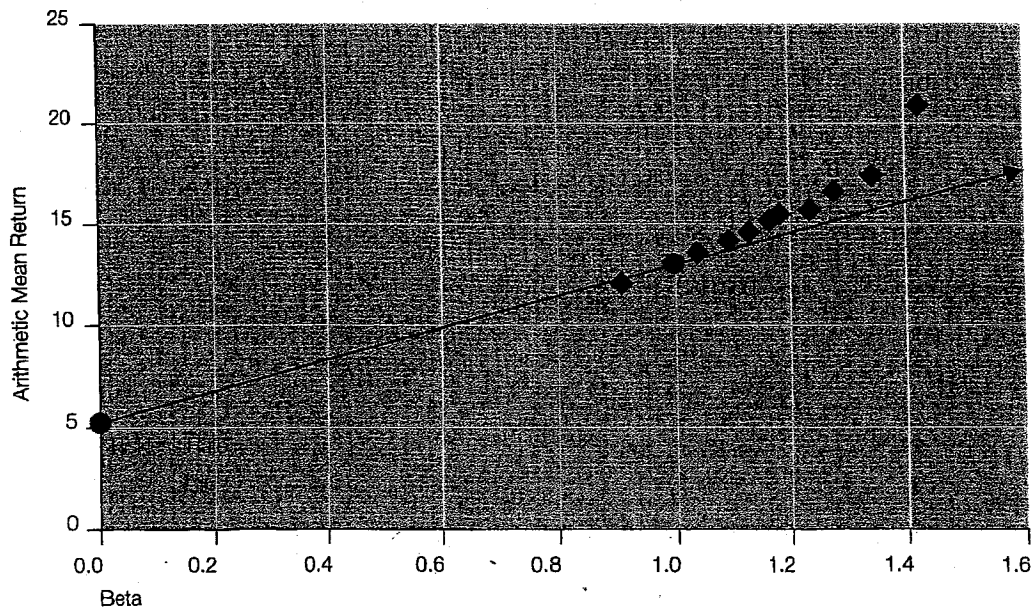
*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926-December 2000.

**Historical riskless rate is measured by the 75-year arithmetic mean income return component of 20-year government bonds (5.22 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (12.98 percent) minus the arithmetic mean income return component of 20-year government bonds (5.22 percent) from 1926-2000.

Graph 6-2

Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ 1926-2000



Firm Size and Return

Table 6-6

Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ, with NYSE Market Benchmarks
1926-2000

Decile	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate†	Size Premium (Return in Excess of CAPM)
1-Largest	0.94	12.06%	6.84%	6.54%	0.29%
2	1.09	13.58%	8.36%	7.61%	0.75%
3	1.15	14.16%	8.93%	8.00%	0.93%
4	1.19	14.60%	9.38%	8.32%	1.06%
5	1.23	15.18%	9.95%	8.58%	1.37%
6	1.26	15.48%	10.26%	8.76%	1.50%
7	1.32	15.68%	10.46%	9.18%	1.28%
8	1.37	16.60%	11.38%	9.54%	1.83%
9	1.44	17.39%	12.17%	10.04%	2.13%
10-Smallest	1.53	20.90%	15.67%	10.66%	5.01%
Mid-Cap, 3-5	1.18	14.46%	9.23%	8.20%	1.03%
Low-Cap, 6-8	1.30	15.75%	10.52%	9.05%	1.47%
Micro-Cap, 9-10	1.46	18.41%	13.18%	10.18%	3.01%

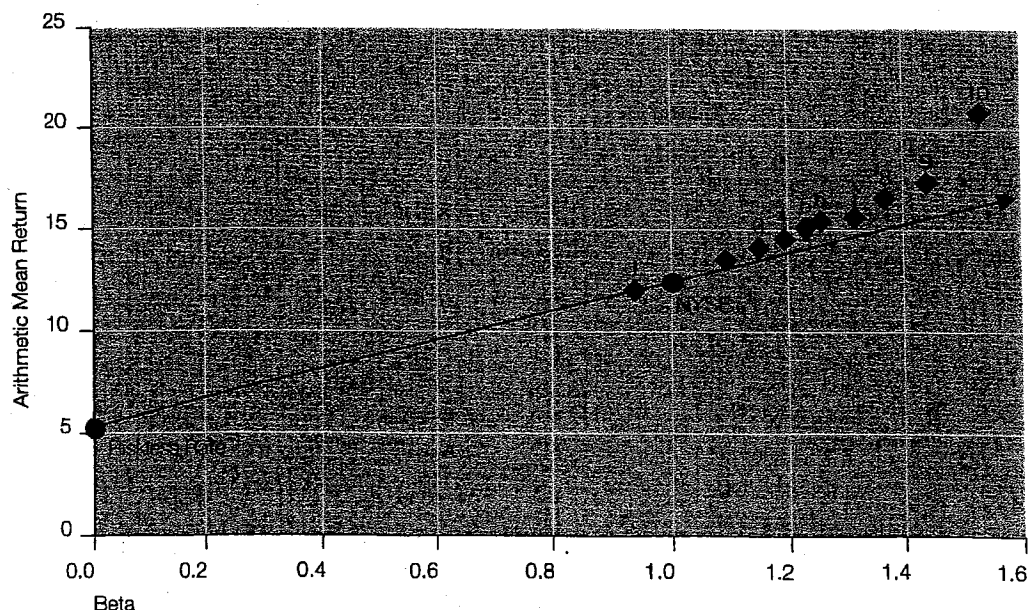
*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the NYSE total capitalization-weighted index total returns in excess of the 30-day U.S. Treasury bill, January 1926-December 2000.

**Historical riskless rate is measured by the 75-year arithmetic mean income return component of 20-year government bonds (5.22 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the NYSE deciles 1-2 (12.19 percent) minus the arithmetic mean income return component of 20-year government bonds (5.22 percent) from 1926-2000.

Graph 6-3

Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ with NYSE Market Benchmarks
1926-2000



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Utilities

The utilities rating methodology encompasses two basic components: business risk analysis and financial analysis. Evaluation of industry characteristics, the utility's position within that industry, its regulation, and its management provides the context for assessing a firm's financial condition.

Historical analysis is a tool for identifying strengths and weaknesses, and provides a starting point for evaluating financial condition. Business position assessment is the qualitative measure of a utility's fundamental creditworthiness. It focuses on the forces that will shape the utilities' future.

Utilities credit analysis factors

Business risk

- Markets and service area economy
- Competitive position
- Operations
- Regulation
- Management
- Fuel, power, and water supply
- Asset concentration

Financial risk

- Earnings protection
- Capital structure
- Cash flow adequacy
- Financial flexibility/capital attraction

The credit analysis of utilities is quickly evolving, as utilities are treated less as regulated monopolies and more as entities faced with a host of challengers in a competitive environment. Marketplace dynamics are supplanting the power of regulation, making it critically important to reduce costs and/or market new services in order to thwart competitors' inroads.

Markets and service area economy

Assessing service territory begins with the economic and demographic evaluation of the area in which the utility has its franchise. Strength of long-term demand for the product is examined from a macroeconomic perspective. This enables Standard & Poor's to evaluate the affordability of rates and the staying power of demand.

Standard & Poor's tries to discern any secular consumption trends and, more importantly, the reasons for them. Specific items examined include the size and growth rate of the market, strength of the franchise, historical and projected sales growth, income levels and trends in population, employment, and per capita income. A utility with a healthy economy and customer base—as illustrated by diverse employment opportunities, average or above-average wealth and income statistics, and low unemploy-

ment—will have a greater capacity to support its operations.

For electric and gas utilities, distribution by customer class is scrutinized to assess the depth and diversity of the utility's customer mix. For example, heavy industrial concentration is viewed cautiously, since a utility may have significant exposure to cyclical volatility. Alternatively, a large residential component yields a stable and more predictable revenue stream. The largest utility customers are identified to determine their importance to the bottom line and assess the risk of their loss and potential adverse effect on the utility's financial position. Credit concerns arise when individual customers represent more than 5% of revenues. The company or industry may play a significant role in the overall economic base of the service area. Moreover, large customers may turn to cogeneration or alternative power supplies to meet their energy needs, potentially leading to reduced cash flow for the utility (even in cases where a large customer pays discounted rates and is not a profitable account for the utility). Customer concentration is less significant for water and telecommunication utilities.

Competitive position

As competitive pressures have intensified in the utilities industry, Standard & Poor's analysis has deepened to include a more thorough review of competitive position.

Electric utility competition

For electric utilities, competitive factors examined include: percentage of firm wholesale revenues that are most vulnerable to competition; industrial load concentration; exposure of key customers to alternative suppliers; commercial concentrations; rates for various customer classes; rate design and flexibility; production costs, both marginal and fixed; the regional capacity situation; and transmission constraints. A regional focus is evident, but high costs and rates relative to national averages are also of significant concern because of the potential for electricity substitutes over time.

Mounting competition in the electric utility industry derives from excess generating capacity, lower barriers to entering the electric generating business, and marginal costs that are below embedded costs. Standard & Poor's has already witnessed declining prices in wholesale markets, as *de facto* retail competition is already being seen in several parts of the country. Standard & Poor's believes that over the coming years more and more customers will want and demand lower prices. Initial concerns focus on the largest industrial loads, but other customer classes will be increasingly vulnerable. Competition will not necessar-

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ily be driven by legislation. Other pressures will arise from global competition and improving technologies, whether it be the declining cost of incremental generation or advances in transmission capacity or substitute energy sources like the fuel cell. It is impossible to say precisely when wide-open retail competition will occur; this will be evolutionary. However, significantly greater competition in retail markets is inevitable.

Gas utility competition

Similarly, gas utilities are analyzed with regard to their competitive standing in the three major areas of demand: residential, commercial, and industrial. Although regulated as holders of monopoly power, natural gas utilities have for some time been actively competing for energy market share with fuel oil, electricity, coal, solar, wood, etc. The long-term staying power of market demand for natural gas cannot be taken for granted. In fact, as the electric utility industry restructures and reduces costs, electric power will become more cost competitive and threaten certain gas markets. In addition, independent gas marketers have made greater inroads behind the city gate and are competing for large gas users. Moreover, the recent trend by state regulators to unbundle utility services is creating opportunities for outsiders to market niche products. Distributors still have the upper hand, but those who do not reduce and control costs, and thus rates, could find competition even more difficult.

Natural gas pipelines are judged to carry a somewhat higher business risk than distribution companies because they face competition in every one of their markets. To the extent a pipeline serves utilities versus industrial end users, its stability is greater. Over the next five years, pipeline competition will heat up since many service contracts with customers are expiring. Most distributor or end-use customers are looking to reduce pipeline costs and are working to improve their load factor to do so. Thus, pipelines will likely find it difficult to recontract all capacity in coming years. Being the pipeline of choice is a function of attractive transportation rates, diversity and quality of services provided, and capacity available in each particular market. In all cases though, periodic discounting of rates to retain customers will occur and put pressure on profitability.

Water utility competition

As the last true utility monopoly, water utilities face very little competition and there is currently no challenge to the continuation of franchise areas. The only exceptions have been cases where investor-owned water companies have been subject to condemnation and municipalization because of poor service or political motivations. In that regard, Standard & Poor's pays close attention to costs and rates in relation to neighboring utilities and national averages. (In contrast, the privatization of public water facilities has begun, albeit at a slower pace than anticipated. This is occurring mostly in the form of operating contracts and public/private partnerships, and not in asset transfers. This trend should continue as cities look for ways to bal-

ance their tight budgets.) Also, water utilities are not fully immune to the forces of competition; in a few instances wholesale customers can access more than one supplier.

Telephone competition

The Telecommunications Act of 1996 accelerates the continuing challenge to the local exchange companies' (LECs) century-old monopoly in the local loop. Competitive access providers (CAPs), both facilities-based and resellers, are aggressively pursuing customers, generally targeting metropolitan areas, and promising lower rates and better service.

Most long-distance calls are still originated and terminated on the local telephone company network. To complete such a call, the long-distance provider (including AT&T, MCI, Sprint and a host of smaller interexchange carriers or "IXCs") must pay the local telephone company a steep "access" fee to compensate the local phone company for the use of its local network. CAPs, in contrast, build or lease facilities that directly connect customers to their long-distance carrier, bypassing the local telephone company and avoiding access fees, and thereby can offer lower long-distance rates. But the LECs are not standing still; they are combating the loss of business to CAPs by lowering access fees, thereby reducing the economic incentive for a high usage long-distance customer to use a CAP. LECs are attempting to make up for the loss of revenues from lower access fees by increasing basic local service rates (or at least not lowering them), since basic service is far less subject to competition. LECs are improving operating efficiency and marketing high margin, value-added new services. Additionally, in the wake of the Telecommunications Act, LECs will capture at least some of the inter-LATA long-distance market. As a result of these initiatives, LECs continue to rebuild themselves—from the traditional utility monopoly to leaner, more marketing oriented organizations.

While LECs, and indeed all segments of the telecommunications sector, face increasing competition, there are favorable industry factors that tend to offset heightened business risk and auger for overall ratings stability for most LECs. Importantly, telecommunications is a declining-cost business. With increased deployment of fiber optics, the cost of transport has fallen dramatically and digital switching hardware and software have yielded more capable, trouble-free and cost-efficient networks. As a result, the cost of network maintenance has dropped sharply, as illustrated by the ratio of employees per 10,000 access lines, an oft cited measurement of efficiency. Ratios as low as 25 employees per 10,000 lines are being seen, down from the typical 40 or more employees per 10,000 ratio of only a few years ago.

In addition, networks are far more capable. They are increasingly digitally switched and able to accommodate high-speed communications. The infrastructure needed to accommodate switched broadband services will be built into telephone networks over the next few years. These advanced networks will enable telephone companies to look to a greater variety of high-margin, value-added serv-

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ices. In addition to those current services such as call waiting or caller ID, the delivery of hundreds of broadcast and interactive video channels will be possible. While these services offer the potential of new revenue streams, they will simultaneously present a formidable challenge. LECs will be entering the new (to them) arena of multimedia entertainment and will have to develop expertise in marketing and entertainment programming acumen; such skills stand in sharp contrast to LECs' traditional strengths in engineering and customer service.

Operations

Standard & Poor's focuses on the nature of operations from the perspective of cost, reliability, and quality of service. Here, emphasis is placed on those areas that require management attention in terms of time or money and which, if unresolved, may lead to political, regulatory, or competitive problems.

Operations of electric utilities

For electric, the status of utility plant investment is reviewed with regard to generating plant availability and utilization, and also for compliance with existing and contemplated environmental and other regulatory standards. The record of plant outages, equivalent availability, load factors, heat rates, and capacity factors are examined. Also important is efficiency, as defined by total megawatt hour per employee and customers per employee. Transmission interconnections are evaluated in terms of the number of utilities to which the utility in question has access, the cost structures and available generating capacity of these other utilities, and the price paid for wholesale power.

Because of mounting competition and the substantial escalation in decommissioning estimates, significant weight is given to the operation of nuclear facilities. Nuclear plants are becoming more vulnerable to high production costs that make their rates uneconomic. Significant asset concentration may expose the utility to poor performance, unscheduled outages or premature shutdowns, and large deferrals or regulatory assets that may need to be written off for the utility to remain competitive. Also, nuclear facilities tend to represent significant portions of their operators' generating capability and assets. The loss of a productive nuclear unit from both power supply and rate base can interrupt the revenue stream and create substantial additional costs for repairs and improvements and replacement power. The ability to keep these stations running smoothly and economically directly influences the ability to meet electric demand, the stability of revenues and costs, and, by extension, the ability to maintain adequate creditworthiness. Thus, economic operation, safe operation, and long-term operation are examined in depth. Specifically, emphasis is placed on operation and maintenance costs, busbar costs, fuel costs, refueling outages, forced outages, plant statistics, NRC evaluations, the potential need for repairs, operating licenses, decommissioning estimates and amounts held in external trusts, spent fuel storage capacity, and management's nuclear experi-

ence. In essence, favorable nuclear operations offer significant opportunities but, if a nuclear unit runs poorly or not at all, the attendant risks can be great.

Operations of gas utilities

For gas pipeline and distribution companies, the degree of plant utilization, the physical condition of the mains and lines, adequacy of storage to meet seasonal needs, "lost and unaccounted for" gas levels, and per-unit nongas operating and construction costs are important factors. Efficiency statistics such as load factor, operating costs per customer, and operating income per employee are also evaluated in comparison to other utilities and the industry as a whole.

Operations of water utilities

As a group, water utilities are continually upgrading their physical plant to satisfy regulations and to develop additional supply. Over the next decade, water systems will increasingly face the task of maintaining compliance, as drinking water regulations change and infrastructure ages. Given that the Safe Drinking Water Act was authorized in 1974, the first generation of treatment plants built to conform with these rules are almost 20 years old. Additionally, because the focus during this period was on satisfying environmental standards, deferred maintenance of distribution systems has been common, especially in older urban areas. The increasing cost of supplying treated water argues against the high level of unaccounted for water witnessed in the industry. Consequently, Standard & Poor's anticipates capital plans for rebuilding distribution lines and major renewal and replacement efforts aimed at treatment plants.

Operations of telephone companies

For telephone companies, cost-of-service analysis focuses on plant capability and measures of efficiency and quality of service. Plant capability is ascertained by looking at such parameters as percentage of digitally switched lines; fiber optic deployment, in particular in those portions of the plant key to network survival; and the degree of broadband capacity fiber and coaxial deployment and broadband switching capacity. Efficiency measures include operating margins, the ratio of employees per 10,000 access lines, and the extent of network and operations consolidation. Quality of service encompasses examination of quantitative measures, such as trouble reports and repeat service calls, as well as an assessment of qualitative factors, that may include service quality goals mandated by regulators.

Regulation

Regulatory rate-setting actions are reviewed on a case-by-case basis with regard to the potential effect on creditworthiness. Regulators' authorizing high rates of return is of little value unless the returns are earnable. Furthermore, allowing high returns based on noncash items does not benefit bondholders. Also, to be viewed positively, regulatory treatment should allow consistent performance from

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period to period, given the importance of financial stability as a rating consideration.

The utility group meets frequently with commission and staff members, both at Standard & Poor's offices and at commission headquarters, demonstrating the importance Standard & Poor's places on the regulatory arena for credit quality evaluation. Input from these meetings and from review of rate orders and their impact weigh heavily in Standard & Poor's analysis.

Standard & Poor's does not "rate" regulatory commissions. State commissions typically regulate a number of diverse industries, and regulatory approaches to different types of companies often differ within a single regulatory jurisdiction. This makes it all but impossible to develop inclusive "ratings" for regulators.

Standard & Poor's evaluation of regulation also encompasses the administrative, judicial, and legislative processes involved in state and federal regulation. These can affect rate-setting activities and other aspects of the business, such as competitive entry, environmental and safety rules, facility siting, and securities sales.

As the utility industry faces an increasingly deregulated environment, alternatives to traditional rate-making are becoming more critical to the ability of utilities to effectively compete, maintain earnings power, and sustain creditor protection. Thus, Standard & Poor's focuses on whether regulators, both state and federal, will help or hinder utilities as they are exposed to greater competition. There is much that regulators can do, from allocating costs to more captive customers to allowing pricing flexibility—and sometimes just stepping out of the way.

Under traditional rate-making, rates and earnings are tied to the amount of invested capital and the cost of capital. This can sometimes reward companies more for justifying costs than for containing them. Moreover, most current regulatory policies do not permit utilities to be flexible when responding to competitive pressures of a deregulated market. Lack of flexible tariffs for electric utilities may lure large customers to wheel cheaper power from other sources.

In general, a regulatory jurisdiction is viewed favorably if it permits earning a return based on the ability to sustain rates at competitive levels. In addition to performance-based rewards or penalties, flexible plans could include market-based rates, price caps, index-based prices, and rates premised on the value of customer service. Such rates more closely mirror the competitive environment that utilities are confronting.

Electric industry regulation

The ability to enter into long-term arrangements at negotiated rates without having to seek regulatory approval for each contract is also important in the electric industry. (While contracting at reduced rates constrains financial performance, it lessens the potential adverse impact in the event of retail wheeling. Since revenue losses associated with this strategy are not likely to be recovered from ratepayers, utilities must control costs well enough to remain

competitive if they are to sustain current levels of bondholder protection.)

Natural gas industry regulation

In the gas industry, too, several state commission policies weigh heavily in the evaluation of regulatory support. Examples include stabilization mechanisms to adjust revenues for changes in weather or the economy, rate and service unbundling decisions, revenue and cost allocation between sales and transportation customers, flexible industrial rates, and the general supportiveness of construction costs and gas purchases.

Water industry regulation

In all water utility activities, federal and state environmental regulations continue to play a critical role. The legislative timetable to effect the 1986 amendments to the Safe Drinking Water Act of 1974 was quite aggressive. But environmental standards-setting has actually slowed over the past couple of years due largely to increasing sentiment that the stringent, costly standards have not been justified on the basis of public health. A moratorium on the promulgation of significant new environmental rules is anticipated.

Telecommunications industry regulation

Despite the advances in telecommunications deregulation, analysis of regulation of telephone operators will continue to be a key rating determinant for the foreseeable future. The method of regulation may be either classic rate-based rate of return or some form of price cap mechanism. The most important factor is to assess whether the regulatory framework—no matter which type—provides sufficient financial incentive to encourage the rated company to maintain its quality of service and to upgrade its plant to accommodate new services while facing increasing competition from wireless operators and cable television companies.

Where regulators do still set tariffs based on an authorized return, Standard & Poor's strives to explore with regulators their view of the rate-of-return components that can materially impact reported versus regulatory earnings. Specifically these include the allowable base upon which the authorized return can be earned, allowable expenses, and the authorized return. Since regulatory oversight runs the gamut from strict, adversarial relationships with the regulated operating companies to highly supportive postures, Standard & Poor's probes beyond the apparent regulatory environment to ascertain the actual impact of regulation on the rated company.

Management

Evaluating the management of a utility is of paramount importance to the analytical process since management's abilities and decisions affect all areas of a company's operations. While regulation, the economy, and other outside factors can influence results, it is ultimately the quality of management that determines the success of a company.

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With emerging competition, utility management will be more closely scrutinized by Standard & Poor's and will become an increasingly critical component of the credit evaluation. Management strategies can be the key determinant in differentiating utilities and in establishing where companies lie on the business position spectrum. It is imperative that managements be adaptable, aggressive, and proactive if their utilities are to be viable in the future; this is especially important for utilities that are currently uncompetitive.

The assessment of management is accomplished through meetings, conversations, and reviews of company plans. It is based on such factors as tenure, industry experience, grasp of industry issues, knowledge of customers and their needs, knowledge of competitors, accounting and financing practices, and commitment to credit quality. Management's ability and willingness to develop workable strategies to address their systems' needs, to deal with the competitive pressures of free market, to execute reasonable and effective long-term plans, and to be proactive in leading their utilities into the future are assessed. Management quality is also indicated by thoughtful balancing of public and private priorities, a record of credibility, and effective communication with the public, regulatory bodies, and the financial community. Boards of directors will receive ever more attention with respect to their role in setting appropriate management incentives.

With competition the watchword, Standard & Poor's also focuses on management's efforts to enhance financial condition. Management can bolster bondholder protection by taking any number of discretionary actions, such as selling common equity, lowering the common dividend payout, and paying down debt. Also important for the electric industry will be creativity in entering into strategic alliances and working partnerships that improve efficiency, such as central dispatching for a number of utilities or locking up at-risk customers through long-term contracts or expanded flexible pricing agreements. Proactive management teams will also seek alternatives to traditional rate-base, rate-of-return rate-making, move to adopt higher depreciation rates for generating facilities, segment customers by individual market preferences, and attempt to create superior service organizations.

In general, management's ability to respond to mounting competition and changes in the utility industry in a swift and appropriate manner will be necessary to maintain credit health.

Fuel, power, and water supply

Assessment of present and prospective fuel and power supply is critical to every electric utility analysis, while gauging the long-term natural gas supply position for gas pipeline and distribution companies and the water resources of a water utility is equally important. There is no similar analytical category for telephone utilities.

Electric utilities

For electric utilities emphasis is placed on generating

reserve margins, fuel mix, fuel contract terms, demand-side management techniques, and purchased power arrangements. The adequacy of generating margins is examined nationally, regionally, and for each individual company. However, the reserve margin picture is muddled by the imprecise nature of peak-load growth forecasting, and also supply uncertainty relating to such things as Canadian capacity availability and potential plant shutdowns due to age, new NRC rules, acid rain remedies, fuel shortages, problems associated with nontraditional technologies, and so forth. Even apparently ample reserves may not be what they seem. Moreover, the quality of capacity is just as important as the size of reserves. Companies' reserve requirements differ, depending upon individual operating characteristics.

Fuel diversity provides flexibility in a changing environment. Supply disruptions and price hikes can raise rates and ignite political and regulatory pressures that ultimately lead to erosion in financial performance. Thus, the ability to alter generating sources and take advantage of lower cost fuels is viewed favorably.

Dependence on any single fuel means exposure to that fuel's problems: electric utilities that rely on oil or gas face the potential for shortages and rapid price increases; utilities that own nuclear generating facilities face escalating costs for decommissioning; and coal-fired capacity entails environmental problems stemming from concerns over acid rain and the "greenhouse effect."

Buying power from neighboring utilities, qualifying facility projects, or independent power producers may be the best choice for a utility that faces increasing electricity demand. There has been a growing reliance on purchased power arrangements as an alternative to new plant construction. This can be an important advantage, since the purchasing utility avoids potential construction cost overruns as well as risking substantial capital. Also, utilities can avoid the financial risks typical of a multiyear construction program that are caused by regulatory lag and prudence reviews. Furthermore, purchased power may enhance supply flexibility, fuel resource diversity, and maximize load factors. Utilities that plan to meet demand projections with a portfolio of supply-side options also may be better able to adapt to future growth uncertainties. Notwithstanding the benefits of purchasing, such a strategy has risks associated with it. By entering into a firm long-term purchased power contract that contains a fixed-cost component, utilities can incur substantial market, operating, regulatory, and financial risks. Moreover, regulatory treatment of purchased power removes any upside potential that might help offset the risks. Utilities are not compensated through incentive rate-making; rather, purchased power is recovered dollar-for-dollar as an operating expense.

To analyze the financial impact of purchased power, Standard & Poor's first calculates the net present value of future annual capacity payments (discounted at 10%). This represents a potential debt equivalent—the off-balance-sheet obligation that a utility incurs when it enters into a long-term purchased power contract. However, Standard

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& Poor's adds to the utility's balance sheet only a portion of this amount, recognizing that such a contractual arrangement is not entirely the equivalent of debt. What percentage is added is a function of Standard & Poor's qualitative analysis of the specific contract and the extent to which market, operating, and regulatory risks are borne by the utility (the risk factor). For unconditional, take-or-pay contracts, the risk factor range is from 40%-80%, with the average hovering around 60%. A lower risk factor is typically assigned for system purchases from coal-fired utilities and a higher risk factor is usually designated for unit-specific nuclear purchases. The range for take-and-pay performance obligations is between 10%-50%.

Gas utilities

For gas distribution utilities, long-term supply adequacy obviously is critical, but the supply role has become even more important in credit analysis since the Federal Energy Regulatory Commission's Order 636 eliminated the interstate pipeline merchant business. This thrust gas supply responsibilities squarely on local gas distributors. Standard & Poor's has always believed distributor management has the expertise and wherewithal to perform the job well, but the risks are significant since gas costs are such a large percentage of total utility costs. In that regard, it is important for utilities to get preapprovals of supply plans by state regulators or at least keep the staff and commissioners well informed. To minimize risks, a well-run program would diversify gas sources among different producers or marketers, different gas basins in the U.S. and Canada, and different pipeline routes. Also, purchase contracts should be firm, with minimal take-or-pay provisions, and have prices tied to an industry index. A modest percentage of fixed-price gas is not unreasonable. Contracts, whether of gas purchases or pipeline capacity, should be intermediate term. Staggering contract expirations (preferably annually) provides an opportunity to be an active market player. A modest degree of reliance on spot purchases provides flexibility, as does the use of market-based storage. Gas storage and on-property gas resources such as liquefied natural gas or propane air are effective peak-day and peak-season supply management tools.

Since pipeline companies no longer buy and sell natural gas and are just common carriers, connections with varied reserve basins and many wells within those basins are of great importance. Diversity of sources helps offset the risks arising from the natural production declines eventually experienced by all reserve basins and individual wells. Moreover, such diversity can enhance a pipeline's attractiveness as a transporter of natural gas to distributors and end users seeking to buy the most economical gas available for their needs.

Water utilities

Nearly all water systems throughout the U.S. have ample long-term water supplies. Yet to gain comfort, Standard & Poor's assesses the production capability of treatment plants and the ability to pump water from underground aquifers in relation to the usage demands from consumers.

Having adequate treated water storage facilities has become important in recent years and has helped many systems meet demands during peak summer periods. Of interest is whether the resources are owned by the utility or purchased from other utilities or local authorities. Owning properties with water rights provides more supply security. This is especially so in states like California where water allocations are being reduced, particularly since recent droughts and environmental issues have created alarm. Since the primary cost for water companies is treatment, it makes little difference whether raw water is owned or bought. In fact, compliance with federal and state water regulations is very high, and the overall cost to deliver treated water to consumers remains relatively affordable.

Asset concentration in the electric utility industry

In the electric industry, Standard & Poor's follows the operations of major generating facilities to assess if they are well managed or troubled. Significant dependence on one generating facility or a large financial investment in a single asset suggests high risk. The size or magnitude of a particular asset relative to total generation, net plant in service, and common equity is evaluated. Where substantial asset concentration exists, the financial profile of a company may experience wide swings depending on the asset's performance. Heavy asset concentration is most prevalent among utilities with costly nuclear units.

Earnings protection

In this category, pretax cash income coverage of all interest charges is the primary ratio. For this calculation, allowance for funds used during construction (AFUDC) is removed from income and interest expense. AFUDC and other such noncash items do not provide any protection for bondholders. To identify total interest expense, the analyst reclassifies certain operating expenses. The interest component of various off-balance-sheet obligations, such as leases and some purchased-power contracts, is included in interest expense. This provides the most direct indication of a utility's ability to service its debt burden.

While considerable emphasis in assessing credit protection is placed on coverage ratios, this measure does not provide the entire earnings protection picture. Also important are a company's earned returns on both equity and capital, measures that highlight a firm's earnings performance. Consideration is given to the interaction of embedded costs, financial leverage, and pretax return on capital.

Capital structure

Analyzing debt leverage goes beyond the balance sheet and covers quasi-debt items and elements of hidden financial leverage. Noncapitalized leases (including sale/leaseback obligations), debt guarantees, receivables financing, and purchased-power contracts are all considered debt equivalents and are reflected as debt in calculating capital

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structure ratios. By making debt level adjustments, the analyst can compare the degree of leverage used by each utility company.

Furthermore, assets are examined to identify undervalued or overvalued items. Assets of questionable value are discounted to more accurately evaluate asset protection.

Some firms use short-term debt as a permanent piece of their capital structure. Short-term debt also is considered part of permanent capital when it is used as a bridge to permanent financing. Seasonal, self-liquidating debt is excluded from the permanent debt amount, but this situation is rare—with the exception of certain gas utilities. Given the long life of almost all utility assets, short-term debt may expose these companies to interest-rate volatility, remarketing risk, bank line backup risk, and regulatory exposure that cannot be readily offset. The lower cost of shorter-term obligations (assuming a positively sloped yield curve) is a positive factor that partially mitigates the risk of interest-rate variability. As a rule of thumb, a level of short-term debt that exceeds 10% of total capital is cause for concern.

Similarly, if floating-rate debt and preferred stock constitute over one-third of total debt plus preferred stock, this level is viewed as unusually high and may be cause for concern. It might also indicate that management is aggressive in its financial policies.

A layer of preferred stock in the capital structure is usually viewed as equity—since dividends are discretionary and the subordinated claim on assets provides a cushion for providers of debt capital. A preferred component of up to 10% is typically viewed as a permanent wedge in the capital structure of utilities. However, as rate-of-return regulation is phased out, preferred stock may be viewed by utilities—as many industrial firms would—as a temporary option for companies that are not current taxpayers that do not benefit from the tax deductibility of interest. Even now, floating-rate preferred and money market perpetual preferred are problematic; a rise in the rate due to deteriorating credit quality tends to induce a company to take out such preferred stock with debt. Structures that convey tax deductibility to preferred stock have become very popular and do generally afford such financings with equity treatment.

Cash flow adequacy

Cash flow adequacy relates to a company's ability to generate funds internally relative to its needs. It is a basic component of credit analysis because it takes cash to pay expenses, fund capital spending, pay dividends, and make interest and principal payments. Since both common and preferred dividend payments are important to maintain capital market access, Standard & Poor's looks at cash flow measures both before and after dividends are paid.

To determine cash flow adequacy, several quantitative relationships are examined. Emphasis is placed on cash flow relative to debt, debt service requirements, and capital spending. Cash flow adequacy is evaluated with respect to a firm's ability to meet all fixed charges, including capacity payments under purchased-power contracts. Despite the conditional nature of some contracts, the purchaser is obligated to pay a minimum capacity charge. The ratio used is funds from operations plus interest and capacity payments divided by interest plus capacity payments.

Financial flexibility/capital attraction

Financing flexibility incorporates a utility's financing needs, plans, and alternatives, as well as its flexibility to accomplish its financing program under stress without damaging creditworthiness. External funding capability complements internal cash flow. Especially since utilities are so capital intensive, a firm's ability to tap capital markets on an ongoing basis must be considered. Debt capacity reflects all the earlier elements: earnings protection, debt leverage, and cash flow adequacy. Market access at reasonable rates is restricted if a reasonable capital structure is not maintained and the company's financial prospects dim. The analyst also reviews indenture restrictions and the impact of additional debt on covenant tests.

Standard & Poor's assesses a company's capacity and willingness to issue common equity. This is affected by various factors, including the market-to-book ratio, dividend policy, and any regulatory restrictions regarding the composition of the capital structure.

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Formulas for key ratios

$$\text{Pretax interest coverage} = \frac{\text{Pretax income from continuing operations} + \text{interest expense}}{\text{Gross interest}}$$

$$\text{Pretax fixed charge coverage including rents} = \frac{\text{Pretax income from continuing operations} + \text{interest expense} + \text{gross rents}}{\text{Gross interest} + \text{gross rents}}$$

$$\text{Pretax funds flow interest coverage} = \frac{\text{Pretax funds flow} + \text{interest expense}}{\text{Gross interest}}$$

$$\text{Funds from operations as a \% of total debt} = \frac{\text{Funds from operations}}{\text{Total debt}} \times 100$$

$$\text{Free operating cash flow as a \% of total debt} = \frac{\text{Free operating cash flow}}{\text{Total debt}} \times 100$$

$$\text{Pretax return on permanent capital} = \frac{\text{Pretax income from continuing operations} + \text{interest expense}}{\text{Sum of (1) average of beginning of year and end of year current maturities, long-term debt, non-current deferred taxes, and equity and (2) average short-term borrowings during year as disclosed in footnotes}} \times 100$$

$$\text{Operating income as a \% of sales} = \frac{\text{Operating income}}{\text{Sales}} \times 100$$

$$\text{Long-term debt as a \% of capitalization} = \frac{\text{Long-term debt}}{\text{Long-term} + \text{equity}} \times 100$$

$$\text{Total debt as a \% of capitalization} = \frac{\text{Total debt}}{\text{Total debt} + \text{equity}} \times 100$$

$$\text{Total debt} + 8 \text{ times rents as a \% of adjusted capitalization} = \frac{\text{Total debt} + 8 \text{ times gross rentals paid}}{\text{Total debt} + 8 \text{ times gross rentals paid} + \text{equity}} \times 100$$

Glossary

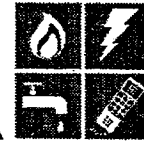
Equity	Shareholders' equity (including preferred stock) plus minority interest.
Free operating cash flow	Funds from operations minus capital expenditures, minus (plus) the increase (decrease) in working capital (excluding changes in cash, marketable securities, and short-term debt).
Funds from operations	Net income from continuing operations plus depreciation, amortization, deferred income taxes and other noncash items.
Gross interest	Gross interest incurred before subtracting (1) capitalized interest, (2) interest income.
Gross rents	Gross operating rents paid before sublease income.
Interest expense	Interest incurred minus capitalized interest, plus amortization of capitalized interest.
Long-term debt	As reported on the balance sheet, including capitalized lease obligations.
Net cash flow	Funds from operations less preferred and common dividends.
Operating income	Sales minus cost of goods manufactured (before depreciation and amortization), selling, general and administrative, and research and development costs.
Pretax funds flow	Pretax income from continuing operations plus depreciation, amortization, and other noncash items.
Total debt	Long-term debt plus current maturities, commercial paper, and other short-term borrowings.

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Utility Financial Targets Are Revised

Standard & Poor's has revised the four principal financial targets that it uses to analyze the credit quality of all investor-owned electric, natural gas, and water utilities in the U.S. (see table on page 3).

Standard & Poor's has created a single set of financial targets that can be applied across the different utility segments. These financial measures reflect the convergence that is occurring throughout the utility industry and the changing risk profile of the industry in general.

No rating changes will result from establishing these new financial targets since they were developed by integrating prior utility financial benchmarks and historical industrial medians. The new financial targets, like the previous benchmarks, pertain to risk-adjusted ratios that distinguish between lower-risk and higher-risk activities. The targets have been broadened to correspond with Standard & Poor's 10-point business profile assessments. The business profile scores assess the qualitative attributes of a firm, with "1" being considered lowest risk and "10" highest risk. Thus, the new targets allow for comparability on a single scale between typically lower-risk activities, such as water operations, gas distribution, and electric transmission, and higher-risk activities, such as merchant power generation, oil and gas exploration and production, and energy trading and marketing. For example, a water utility, which can expect to have a lower business risk profile than a typical integrated electric utility, will be required to meet less stringent financial targets for any given rating category.

Funds from operations to total debt, funds from operations interest coverage, pretax interest coverage, and total debt to total capital are the four credit-protection ratios that are an integral part of

Standard & Poor's quantitative review on the overall credit analysis of the utility sector. Standard & Poor's recognizes that the nature of utilities' business strategies is changing significantly and is shifting toward higher-risk endeavors. These undertakings bear risk characteristics that are more representative of an industrial company than a regulated utility. Therefore, Standard & Poor's also incorporates a greater reliance on several additional ratios in its credit analysis. These include, but are not limited to, pretax return on permanent capital, funds from operations to current obligations, earnings before interest and taxes to total assets, net cash flow to capital expenditures, and capital expenditures to average total capital. Additionally, further analysis of the cash flow coverage of all obligations (including preferred stock) is performed. Although these measures do not have published targets, broader use of these financial ratios, combined with the four principal targets, provides greater depth to the fundamental analysis used in the rating evaluation process.

Consistent with Standard & Poor's ratings methodology, the four published financial targets will be used with other quantitative measures, business risk analysis, and comparative analysis of peer groupings to determine credit ratings. The new targets are designed to assist utilities, utility affiliates, and the investment community in assessing the relative financial strength of issuers. ■

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COVER STORY

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KEY CONTACTS

Revised Utility Group Financial Targets*

FFO to total debt Business position

	AA		A		BBB		BB		B	
1	20.0	16.5	16.5	12.5	12.5	7.0	<7.0			
2	25.0	21.0	21.0	16.0	16.0	10.5	<10.5			
3	31.5	26.0	26.0	20.0	20.0	14.0	14.0	9.5	9.5	4.0
4	36.5	30.5	30.5	24.5	24.5	17.5	17.5	12.0	12.0	6.0
5	40.0	33.0	33.0	27.0	27.0	20.5	20.5	15.0	15.0	7.5
6	47.0	39.0	39.0	31.0	31.0	22.0	22.0	16.0	16.0	8.5
7	56.0	47.0	47.0	36.5	36.5	24.5	24.5	17.0	17.0	9.5
8	66.0	55.0	55.0	42.5	42.5	27.5	27.5	18.5	18.5	11.0
9			64.5	49.5	49.5	32.0	32.0	22.0	22.0	12.5
10			78.0	60.5	60.5	39.0	39.0	28.0	28.0	17.5

FFO interest coverage Business position

	AA		A		BBB		BB		B	
1	3.1	2.6	2.6	1.9	1.9	0.9	<0.9			
2	3.9	3.3	3.3	2.5	2.5	1.5	<1.5			
3	4.5	3.9	3.9	3.1	3.1	2.1	2.1	1.3	1.3	0.5
4	5.1	4.5	4.5	3.8	3.8	2.7	2.7	1.8	1.8	0.9
5	5.4	4.8	4.8	4.0	4.0	3.0	3.0	2.1	2.1	1.1
6	6.6	5.7	5.7	4.5	4.5	3.1	3.1	2.2	2.2	1.2
7	8.4	7.0	7.0	5.1	5.1	3.3	3.3	2.3	2.3	1.3
8	10.2	8.3	8.3	5.9	5.9	3.5	3.5	2.4	2.4	1.5
9			9.5	7.1	7.1	4.3	4.3	2.9	2.9	1.8
10			11.3	8.6	8.6	5.3	5.3	3.6	3.6	2.3

Pretax interest coverage Business position

	AA		A		BBB		BB		B	
1	2.6	2.4	2.4	1.8	1.8	0.8	<0.8			
2	3.4	2.9	2.9	2.3	2.3	1.3	<1.3			
3	4.0	3.4	3.4	2.8	2.8	1.8	1.8	1.1	1.1	0.3
4	4.6	4.0	4.0	3.3	3.3	2.2	2.2	1.3	1.3	0.5
5	5.0	4.3	4.3	3.5	3.5	2.4	2.4	1.5	1.5	0.6
6	6.2	5.2	5.2	4.0	4.0	2.6	2.6	1.6	1.6	0.7
7	8.0	6.5	6.5	4.7	4.7	2.8	2.8	1.8	1.8	0.9
8	9.9	8.0	8.0	5.5	5.5	3.0	3.0	2.0	2.0	1.1
9			9.1	6.6	6.6	3.7	3.7	2.5	2.5	1.4
10			11.1	8.4	8.4	5.0	5.0	3.3	3.3	1.8

Total debt to total capital Business position

	AA		A		BBB		BB		B	
1	50.5	55.0	55.0	60.5	60.5	67.5	>67.5			
2	46.5	51.0	51.0	56.5	56.5	63.5	>63.5			
3	42.0	47.5	47.5	53.0	53.0	61.0	61.0	67.0	67.0	74.0
4	37.5	43.0	43.0	49.5	49.5	57.0	57.0	64.0	64.0	72.5
5	36.0	41.5	41.5	47.0	47.0	55.0	55.0	62.5	62.5	71.0
6	32.5	39.5	39.5	46.0	46.0	53.5	53.5	60.5	60.5	69.0
7	30.5	37.5	37.5	45.0	45.0	52.5	52.5	59.5	59.5	68.0
8	28.0	35.0	35.0	43.0	43.0	51.5	51.5	58.0	58.0	66.0
9			30.0	39.0	39.0	47.5	47.5	54.0	54.0	61.5
10			24.0	33.0	33.0	40.5	40.5	46.0	46.0	53.0

*As of June 1999. FFO—Funds from operations.

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PROXY GROUP OF NINE C. A. TURNER WATER COMPANIES
CAPITALIZATION AND FINANCIAL STATISTICS (1)
1996 - 2000, INCLUSIVE

	2000	1999	1998	1997	1996
	(MILLIONS OF DOLLARS)				
<u>CAPITALIZATION STATISTICS</u>					
AMOUNT OF CAPITAL EMPLOYED					
TOTAL PERMANENT CAPITAL	\$722,212	\$696,270	\$577,888	\$519,242	\$488,967
SHORT-TERM DEBT	\$64,711	\$43,716	\$18,403	\$21,857	\$20,329
TOTAL CAPITAL EMPLOYED	\$786,922	\$739,986	\$596,291	\$541,099	\$509,296
<u>INDICATED AVERAGE CAPITAL COST RATES (2)</u>					
LONG-TERM DEBT	5.1 %	4.7 %	3.9 %	2.3 %	4.1 %
PREFERRED STOCK	6.7	5.9	5.8	5.6	5.1
<u>CAPITAL STRUCTURE RATIOS</u>					
BASED ON TOTAL PERMANENT CAPITAL:					
LONG-TERM DEBT	50.8 %	50.6 %	50.1 %	50.6 %	50.8 %
PREFERRED STOCK	1.0	1.0	1.3	1.5	1.4
COMMON EQUITY	48.2	48.4	48.6	47.9	47.8
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
<u>5 YEAR AVERAGE</u>					
BASED ON TOTAL CAPITAL:					
TOTAL DEBT, INCLUDING SHORT-TERM	53.2 %	52.8 %	52.2 %	52.3 %	51.9 %
PREFERRED STOCK	1.0	1.0	1.2	1.5	1.4
COMMON EQUITY	48.8	46.2	46.8	46.2	46.7
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
<u>FINANCIAL STATISTICS</u>					
<u>FINANCIAL RATIOS - MARKET BASED</u>					
EARNINGS / PRICE RATIO	5.3 %	5.3 %	6.3 %	7.1 %	8.2 %
MARKET / AVERAGE BOOK RATIO	196.4	202.7	186.4	158.8	140.4
DIVIDEND YIELD	3.7	3.6	4.0	4.8	5.5
DIVIDEND PAYOUT RATIO	74.1	66.9	64.7	68.4	68.4
<u>RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY</u>	10.1 %	10.8 %	11.1 %	11.0 %	11.2 %
<u>COVERAGES - EXCLUDING ALL AFUDC (3)</u>					
BEFORE INCOME TAXES: ALL INTEREST CHARGES	3.65 x	3.52 x	3.20 x	2.77 x	2.77 x
AFTER INCOME TAXES: ALL INTEREST CHARGES	2.55	2.51	2.33	1.87	1.87
OVERALL COVERAGE: ALL INTEREST + PRD. DIV.	2.52	2.46	2.30	1.85	1.85
<u>QUALITY OF EARNINGS</u>					
AFUDC / INCOME AVAILABLE FOR COMMON EQUITY	4.2 %	5.9 %	5.3 %	74.1 %	31.2 %
EFFECTIVE INCOME TAX RATE	38.5	39.3	38.0	38.6	39.1
NET CASH FLOW / CAPITAL EXPENDITURES (4)	50.8	46.3	44.5	-20.8	70.6
FUNDS FROM OPERATIONS / TOTAL DEBT (5)	16.8	17.4	17.9	18.3	17.5
FUNDS FROM OPERATIONS / INTEREST COVERAGE (6)	4.1 x	3.9 x	3.5 x	3.5 x	3.3 x

SEE PAGE 2 FOR NOTES

Proxy Group of Nine C. A. Turner Water Companies
Capitalization and Financial Statistics
1996-2000, Inclusive

Notes:

- (1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.
- (2) Computed by relating actual long-term debt interest or preferred stock dividends booked to average of beginning and ending long-term debt or preferred stock reported to be outstanding.
- (3) Coverages - excluding all AFUDC represent the number of times available earnings, excluding all AFUDC, cover fixed charges.
- (4) Net cash flow / capital spending is the percentage of gross construction expenditures, excluding all AFUDC, provided by funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC), after payment of all cash dividends.
- (5) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) as a percentage of total debt.
- (6) Funds from operations (as defined in Note 5) plus interest charges divided by interest charges

Selection Criteria:

The basis of selection was to include those water companies: 1) which are included in the Water Company Group of C. A. Turner Public Utility Reports (December 2001); and 2) which have Thomson FN / First Call consensus five-year EPS growth rate projections.

The following eight water companies met the above criteria:

American States Water Co.
American Water Works Co., Inc.
Artesian Resources Corp.
California Water Service Group
Connecticut Water Service, Inc.
Middlesex Water Company
Pennichuck Corporation
Philadelphia Suburban Corp.
SJW Corporation

United Utility Companies, Inc.
Capital Structure Ratios Based upon Total Capital for
the Proxy Group of Nine C. A. Turner Water Companies
for the Years 1996 through 2000

	<u>2000</u>	<u>1999</u>	<u>1998</u>	<u>1997</u>	<u>1996</u>
<u>American States Water Co.</u>					
Long-Term Debt	42.50 %	47.98 %	38.38 %	39.20 %	39.49 %
Short-Term Debt	10.80	6.01	12.05	8.82	5.87
Preferred Stock	0.46	0.56	0.64	0.71	0.78
Common Equity	<u>46.24</u>	<u>45.45</u>	<u>48.93</u>	<u>51.27</u>	<u>53.86</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>American Water Works Co., Inc.</u>					
Long-Term Debt	53.26 %	55.26 %	60.25 %	57.96 %	57.62 %
Short-Term Debt	9.03	5.45	2.47	4.12	4.79
Preferred Stock	1.15	2.13	2.71	2.99	3.22
Common Equity	<u>36.56</u>	<u>37.16</u>	<u>34.57</u>	<u>34.93</u>	<u>34.37</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Artesian Resources Corp.</u>					
Long-Term Debt	58.71 %	46.49 %	46.54 %	52.60 %	49.23 %
Short-Term Debt	3.65	10.68	12.09	2.74	1.32
Preferred Stock	0.76	1.01	1.26	1.61	2.30
Common Equity	<u>36.88</u>	<u>41.82</u>	<u>40.11</u>	<u>43.05</u>	<u>47.15</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>California Water Service Group</u>					
Long-Term Debt	46.69 %	45.04 %	41.57 %	43.33 %	46.25 %
Short-Term Debt	3.59	3.85	6.75	4.52	2.44
Preferred Stock	0.85	0.98	1.04	1.08	1.13
Common Equity	<u>48.87</u>	<u>50.13</u>	<u>50.64</u>	<u>51.07</u>	<u>50.18</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Connecticut Water Service, Inc.</u>					
Long-Term Debt	49.25 %	49.97 %	50.78 %	45.39 %	47.17 %
Short-Term Debt	0.87	1.83	1.54	7.33	5.02
Preferred Stock	0.59	0.59	0.63	0.64	0.67
Common Equity	<u>49.29</u>	<u>47.61</u>	<u>47.05</u>	<u>46.64</u>	<u>47.14</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Middlesex Water Company</u>					
Long-Term Debt	50.48 %	51.88 %	51.79 %	48.26 %	50.53 %
Short-Term Debt	3.71	1.26	0.66	0.51	0.00
Preferred Stock	2.49	2.55	3.31	4.55	2.54
Common Equity	<u>43.32</u>	<u>44.31</u>	<u>44.24</u>	<u>46.68</u>	<u>46.93</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Pennichuck Corporation</u>					
Long-Term Debt	47.80 %	51.56 %	52.87 %	64.86 %	62.31 %
Short-Term Debt	0.00	0.00	0.00	0.00	0.00
Preferred Stock	2.02	0.54	0.59	0.00	0.00
Common Equity	<u>50.18</u>	<u>47.90</u>	<u>46.54</u>	<u>35.14</u>	<u>37.69</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Philadelphia Suburban Corp.</u>					
Long-Term Debt	48.18 %	47.44 %	52.40 %	52.88 %	54.60 %
Short-Term Debt	8.85	11.48	1.05	2.34	1.32
Preferred Stock	0.45	0.48	0.64	1.67	2.10
Common Equity	<u>42.52</u>	<u>40.60</u>	<u>45.91</u>	<u>43.11</u>	<u>41.98</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>SJW Corporation</u>					
Long-Term Debt	36.66 %	37.94 %	38.60 %	35.95 %	38.85 %
Short-Term Debt	4.56	1.39	0.00	0.00	0.00
Preferred Stock	0.00	0.00	0.00	0.02	0.20
Common Equity	<u>58.78</u>	<u>60.67</u>	<u>61.40</u>	<u>64.03</u>	<u>60.95</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Proxy Group of Nine C. A. Turner Water Companies</u>					
Long-Term Debt	48.17 %	48.18 %	48.13 %	48.94 %	49.56 %
Short-Term Debt	5.01	4.66	4.07	3.38	2.31
Preferred Stock	0.97	0.98	1.20	1.48	1.44
Common Equity	<u>45.85</u>	<u>46.18</u>	<u>46.60</u>	<u>46.20</u>	<u>46.69</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>

Source of Information: Standard & Poor's Compustat Services, Inc. PC Plus Data Base

PROXY GROUP OF FOUR VALUE LINE WATER COMPANIES
CAPITALIZATION AND FINANCIAL STATISTICS (1)
1996 - 2000, INCLUSIVE

	2000	1999	1998	1997	1996	
	(MILLIONS OF DOLLARS)					
<u>CAPITALIZATION STATISTICS</u>						
AMOUNT OF CAPITAL EMPLOYED						
TOTAL PERMANENT CAPITAL	\$1,459,017	\$1,405,814	\$1,145,706	\$1,036,307	\$975,604	
SHORT-TERM DEBT	\$140,193	\$94,383	\$38,599	\$46,416	\$44,113	
TOTAL CAPITAL EMPLOYED	\$1,599,210	\$1,500,197	\$1,184,305	\$1,082,722	\$1,019,717	
<u>INDICATED AVERAGE CAPITAL COST RATES (2)</u>						
LONG-TERM DEBT	7.1 %	8.0 %	8.1 %	7.9 %	7.9 %	
PREFERRED STOCK	6.7	5.2	5.1	4.9	4.3	5 YEAR AVERAGE
<u>CAPITAL STRUCTURE RATIOS</u>						
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	51.9 %	52.5 %	50.8 %	50.8 %	51.3 %	51.4 %
PREFERRED STOCK	0.8	1.1	1.3	1.6	1.9	1.4
COMMON EQUITY	47.3	46.4	47.9	47.6	46.8	47.2
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT-TERM	55.7 %	55.6 %	53.7 %	53.3 %	53.1 %	54.3 %
PREFERRED STOCK	0.7	1.1	1.3	1.6	1.8	1.3
COMMON EQUITY	43.6	43.3	45.0	45.1	45.1	44.4
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
<u>FINANCIAL STATISTICS</u>						
<u>FINANCIAL RATIOS - MARKET BASED</u>						
EARNINGS / PRICE RATIO	5.8 %	5.0 %	5.4 %	6.4 %	7.2 %	5.9 %
MARKET / AVERAGE BOOK RATIO	191.0	209.4	216.5	185.8	159.3	192.4
DIVIDEND YIELD	3.8	3.5	3.6	4.2	4.9	4.0
DIVIDEND PAYOUT RATIO	66.5	67.7	66.9	64.9	66.3	66.4
<u>RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY</u>	10.9 %	10.8 %	11.2 %	11.7 %	11.2 %	11.2 %
<u>COVERAGES - EXCLUDING ALL AFUDC (3)</u>						
BEFORE INCOME TAXES: ALL INTEREST CHARGES	2.97 x	2.94 x	3.04 x	3.21 x	3.03 x	3.04 x
AFTER INCOME TAXES: ALL INTEREST CHARGES	2.16	2.12	2.23	2.32	2.19	2.20
OVERALL COVERAGE: ALL INTEREST + PRD. DIV.	2.15	2.10	2.21	2.29	2.16	2.18
<u>QUALITY OF EARNINGS</u>						
AFUDC / INCOME AVAILABLE FOR COMMON EQUITY	3.5 %	4.2 %	4.0 %	3.4 %	3.7 %	3.7 %
EFFECTIVE INCOME TAX RATE	40.1	41.3	38.5	39.4	40.3	39.9
NET CASH FLOW / CAPITAL EXPENDITURES (4)	56.4	49.0	51.6	58.6	43.4	51.8
FUNDS FROM OPERATIONS / TOTAL DEBT (5)	15.7	16.4	18.4	18.0	16.0	16.9
FUNDS FROM OPERATIONS / INTEREST COVERAGE (6)	3.3 x	3.4 x	3.5 x	3.4 x	3.1 x	3.3 x

SEE PAGE 2 FOR NOTES.

Proxy Group of Four Value Line Water Companies
Capitalization and Financial Statistics
1996-2000, Inclusive

Notes:

- (1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.
- (2) Computed by relating actual long-term debt interest or preferred stock dividends booked to average of beginning and ending long-term debt or preferred stock reported to be outstanding.
- (3) Coverages - excluding all AFUDC represent the number of times available earnings, excluding all AFUDC, cover fixed charges.
- (4) Net cash flow / capital spending is the percentage of gross construction expenditures, excluding all AFUDC, provided by funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC), after payment of all cash dividends.
- (5) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) as a percentage of total debt.
- (6) Funds from operations (as defined in Note 5) plus interest charges divided by interest charges

Selection Criteria:

The basis of selection was to include those water companies: 1) which are included in the Water Utility Group of Value Line Investment Survey (Standard Edition – November 2, 2001)

The following four water companies met the above criteria:

American States Water Co.
American Water Works Co., Inc.
California Water Service Group
Philadelphia Suburban Corp.

United Utility Companies, Inc.
Capital Structure Ratios Based upon Total Capital for
the Proxy Group of Four Value Line Water Companies
for the Years 1996 through 2000

	<u>2000</u>	<u>1999</u>	<u>1998</u>	<u>1997</u>	<u>1996</u>
<u>American States Water Co.</u>					
Long-Term Debt	42.50 %	47.98 %	38.38 %	39.20 %	39.49 %
Short-Term Debt	10.80	6.01	12.05	8.82	5.87
Preferred Stock	0.46	0.56	0.64	0.71	0.78
Common Equity	<u>46.24</u>	<u>45.45</u>	<u>48.93</u>	<u>51.27</u>	<u>53.86</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>American Water Works Co., Inc.</u>					
Long-Term Debt	53.26 %	55.26 %	60.25 %	57.96 %	57.62 %
Short-Term Debt	9.03	5.45	2.47	4.12	4.79
Preferred Stock	1.15	2.13	2.71	2.99	3.22
Common Equity	<u>36.56</u>	<u>37.16</u>	<u>34.57</u>	<u>34.93</u>	<u>34.37</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>California Water Service Group</u>					
Long-Term Debt	46.69 %	45.04 %	41.57 %	43.33 %	46.25 %
Short-Term Debt	3.59	3.85	6.75	4.52	2.44
Preferred Stock	0.85	0.98	1.04	1.08	1.13
Common Equity	<u>48.87</u>	<u>50.13</u>	<u>50.64</u>	<u>51.07</u>	<u>50.18</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Philadelphia Suburban Corp.</u>					
Long-Term Debt	48.18 %	47.44 %	52.40 %	52.88 %	54.60 %
Short-Term Debt	8.85	11.48	1.05	2.34	1.32
Preferred Stock	0.45	0.48	0.64	1.67	2.10
Common Equity	<u>42.52</u>	<u>40.60</u>	<u>45.91</u>	<u>43.11</u>	<u>41.98</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Proxy Group of Four Value Line Water Companies</u>					
Long-Term Debt	47.66 %	48.93 %	48.15 %	48.34 %	49.49 %
Short-Term Debt	8.06	6.70	5.58	4.95	3.60
Preferred Stock	0.73	1.04	1.26	1.61	1.81
Common Equity	<u>43.55</u>	<u>43.33</u>	<u>45.01</u>	<u>45.10</u>	<u>45.10</u>
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>

Source of Information: Standard & Poor's Compustat Services, Inc. PC Plus Data Base



**UTILITY REGULATORY POLICY IN THE
UNITED STATES
AND CANADA**

COMPILATION 1995-1996

OF THE

**NATIONAL ASSOCIATION OF
REGULATORY UTILITY COMMISSIONERS**

Michael Foley
Acting Executive Director

Jessica O'Connor-Petts
Research Analyst

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TABLE 308 - AGENCY AUTHORITY OVER RATE OF RETURN - WATER UTILITIES

AGENCY	Agency determines rate of return under its general authority	Capital structure is adjusted to exclude non-utility financing when it is traceable	Method Agency favors in determining rate of return								Duration of call protection provision influences judgment in determining rate of return
			No ONE method ALL are considered	** Dis-counted cash flow	** Comp-arable earn-ings test	** Earn-ings/price ratio	** Mid-point app-roach	** Capital asset pricing model	** Risk prem-ium	Other	
ALABAMA PSC 11/	X	X		X							Possible.
ALASKA PUC	X	X			X						
ARIZONA CC	X	X	X 2/	X 6/							
ARKANSAS PSC	X		X	X 9/							
CALIFORNIA PUC	X	X 1/	X 2/	X	X			X	X	X	Possible.
COLORADO PUC	X	X		X 7/	X						
CONNECTICUT DPUC	X	X		X							
DELAWARE PSC	X		X 2/	X	X					X	
DC PSC	DOES NOT REGULATE										
FLORIDA PSC	X	X 1/	X 2/								
GEORGIA PSC	DOES NOT REGULATE										
HAWAII PUC	X	X	X 2/	X 7/	X	X				X	
IDAHO PUC	X	X	X 2/				X			X	
ILLINOIS CC	X		X								
INDIANA URC	X										
IOWA UB	X	X 1/	X	X					X	X 5/	
KANSAS SCC	X	X		X							
KENTUCKY PSC	X	X	X 2/	X	X	X	X			X	
LOUISIANA PSC	X			X							
MAINE PUC	X	8/	X 7/	X							
MARYLAND PSC	X	X		X						X 5/	
MASSACHUSETTS DPU	X	X		X 4/						X 4/	
MICHIGAN PSC	X	X	X	X	X		X	X	X	X	
MINNESOTA PUC	DOES NOT REGULATE										
MISSISSIPPI PSC	X	X		X	X						
MISSOURI PSC 12/	X	X		X	X						
MONTANA PSC	X	X		X							
NEBRASKA PSC	X	X	X								
NEVADA PSC	X	X		X	X	X					
NEW HAMPSHIRE PUC	X	X		X							Yes
NEW JERSEY BPU 11/	X	X	X	X				X	X	X	
NEW MEXICO PUC	X	X	X 2/	X						X	
NEW YORK PSC	X	X	X	X 6/						X	
NORTH CAROLINA UC	X	X	X 2/	X	X			X	X	X	
NORTH DAKOTA PSC	DOES NOT REGULATE										
OHIO PUC	X	X	X	X 6/						X 6/	No decision.
OKLAHOMA CC	X	X 1/	X 2/	X						X	
OREGON PUC	X			X				X			
PENNSYLVANIA PUC	X	X	X 2/	X	X	X	X			X	Maybe, if soon
RHODE ISLAND PUC	X	X	X	X	X					X 3/	
SOUTH CAROLINA PSC	X	X	X	X				X	X		
SOUTH DAKOTA PUC	DOES NOT REGULATE										
TEXAS NRCC	X	X									
UTAH PSC	X	X		X							
VERMONT PSB	X	X		X	X					X	
VIRGINIA SCC	X	X	X 2/	X							
WASHINGTON UTC	X	X		X	X						
WEST VIRGINIA PSC	X	X	X 2/	X				X	X	X	
WISCONSIN PSC	X	X	X 2/	X				X		X	
WYOMING PSC	X	ICB	X 2/	X	X					X 10/	
PUERTO RICO PSC 11/	X	X		X	X						
VIRGIN ISLANDS PSC	X	8/	X 2/	X	X					X	
ALBERTA EUB	X	X	X 2/	X	X					X	
NOVA SCOTIA UARB	X	X	X 2/	X	X				X	X	

** For definitions of terms, please consult the Glossary of Terms at the back of this book. ICB=Case-by-Case Basis

FOOTNOTES - TABLE 308
AGENCY AUTHORITY OVER RATE OF RETURN

- 1/ Non-utility investment dollars are always excluded from rate base. Where non-utility investment is comparatively small, capital ratios are not adjusted. When non-utility investment is large, we usually remove non-utility investment from equity.
- 2/ Commission favors no single method, but rather that which produces the most reasonable results.
- 3/ It may use any method it desires especially in the case of a small company.
- 4/ DCF is preferred, but Department approves other methods which check DCF result; risk spread analysis preferred by a slight margin. Financial condition of utility also given serious consideration.
- 5/ DCF is preferred; other methods are considered.
- 6/ No single method, however, discounted cash flow is frequently used.
- 7/ DCF has been the preferred method, but its results should be checked with other methods.
- 8/ Never an issue before this agency.
- 9/ Agency favors DCF, but any method presented is considered.
- 10/ Most jurisdictional water operations are so small an operation ratio or cash flow basis is used rather than a ROR determination.
- 11/ Commission did not respond to request for update information; this data may not be current.
- 12/ DCF has been the preferred method, but its results are generally checked with other methods such as risk premium and CAPM.

United Utility Companies, Inc.
Stock Price Index Level, Earnings Per Share and Dividends Per Share
for the S&P Utilities Index and the S&P 500 Composite Index
Quarterly for the Second Quarter 1990 through the Second Quarter 2001

Year	Quarter	S&P Utilities Index			S&P 500 Composite Index		
		Stock Price Index	EPS -	DPS -	Stock Price Index	EPS -	DPS -
			Adjusted to Stock Price Index (4 qtr. total)	Adjusted to Stock Price Index (4 qtr. total)		Adjusted to Stock Price Index (4 qtr. total)	Adjusted to Stock Price Index (4 qtr. total)
1990	2nd	141.39	9.86	8.18	358.02	21.26	11.67
	3rd	133.02	9.97	8.16	306.05	21.74	11.84
	4th	143.59	9.65	8.29	330.22	21.34	12.10
1991	1st	144.82	9.50	8.24	375.22	20.87	12.12
	2nd	136.58	9.45	8.41	371.16	19.35	12.15
	3rd	145.18	9.34	8.53	387.86	17.82	12.28
	4th	155.16	8.60	8.51	417.09	15.97	12.20
1992	1st	138.68	8.63	8.64	403.69	16.20	12.32
	2nd	147.33	9.02	8.54	408.14	17.05	12.32
	3rd	156.79	9.50	8.55	417.80	18.04	12.39
	4th	158.46	10.64	8.55	435.71	19.09	12.38
1993	1st	173.45	10.86	8.55	451.67	19.84	12.48
	2nd	175.34	11.02	8.56	450.53	19.33	12.52
	3rd	185.39	10.75	8.61	458.93	20.41	12.52
	4th	172.58	8.62	8.66	466.45	21.88	12.58
1994	1st	156.33	8.70	8.70	445.77	22.71	12.71
	2nd	153.99	8.88	8.87	444.27	25.20	12.84
	3rd	152.50	9.37	8.93	462.69	27.33	12.93
	4th	150.12	11.57	8.86	459.27	30.60	13.18
1995	1st	158.38	11.89	8.90	500.71	32.60	13.18
	2nd	167.86	12.12	8.83	544.75	34.44	13.37
	3rd	184.46	12.56	8.70	584.41	35.18	13.58
	4th	202.58	12.30	8.88	615.93	33.96	13.79
1996	1st	190.84	12.79	8.94	645.50	34.04	14.10
	2nd	198.08	13.03	9.00	670.63	34.91	14.27
	3rd	188.80	13.94	9.46	687.31	36.00	14.66
	4th	198.81	14.61	9.64	740.74	38.72	14.90
1997	1st	189.82	14.72	9.82	757.12	40.24	15.06
	2nd	198.39	13.74	10.01	885.14	40.55	15.16
	3rd	205.24	13.03	10.04	947.28	40.64	15.33
	4th	235.81	9.52	10.07	970.43	39.72	15.50
1998	1st	246.50	9.10	10.17	1101.75	39.54	15.65
	2nd	246.75	8.03	10.34	1133.84	38.97	15.95
	3rd	255.53	9.20	10.21	1017.01	38.09	16.15
	4th	259.62	12.15	10.13	1229.23	37.71	16.20
1999	1st	232.91	12.39	10.15	1286.37	38.38	16.45
	2nd	257.51	13.41	9.95	1372.71	41.02	16.45
	3rd	242.77	14.83	9.92	1282.71	43.96	16.64
	4th	227.22	14.41	9.89	1469.25	48.17	16.69
2000	1st	243.12	15.33	9.87	1498.58	50.94	16.76
	2nd	256.96	16.82	9.93	1454.60	51.92	16.70
	3rd	337.83	16.11	9.78	1436.51	53.70	16.34
	4th	350.61	11.54	9.65	1320.28	50.00	16.27
2001	1st	323.57	10.09	9.42	1160.33	45.44	15.97
	2nd	303.12	10.56	8.97	1224.42	36.79	15.69

% Change from
2nd Quarter 1990 -
2nd Quarter 2001

114.39 % 7.10 % 9.66 % 242.00 % 73.05 % 34.45 %

Source of Information: Standard & Poor's Security Price Index Record
Standard & Poor's Current Statistics

United Utility Companies, Inc.
Hypothetical Example of the Inadequacy of
A DCF Return Rate Related to Book Value
When Market Value is Greater / Less than Book Value

Line No.		<u>1</u>	<u>2</u>	<u>3</u>
		<u>Market Value</u>	<u>Book Value with Market to Book Ratio of 180%</u>	<u>Book Value with Market to Book Ratio of 80%</u>
1.	Per Share	\$ 24.000	\$ 13.33	\$ 30.00
2.	DCF Cost Rate (1)	10.00%	10.00%	10.00%
3.	Return in Dollars	\$ 2.400	\$ 1.333	\$ 3.000
4.	Dividends (2)	\$ 0.960	\$ 0.960	\$ 0.960
5.	Growth in Dollars	\$ 1.440	\$ 0.373	\$ 2.040
6.	Return on Market Value	10.00%	5.55% (3)	12.50% (4)
7.	Rate of Growth on Market Value	6.00% (5)	1.55% (6)	8.50% (7)

Notes: (1) Comprised of 4.0% dividend yield and 6.0% growth.

(2) $\$24.00 \times 4.0\% \text{ yield} = \0.960 .

(3) $\$1.333 / \$24.00 \text{ market value} = 5.55\%$.

(4) $\$3.000 / \$24.00 \text{ market value} = 12.50\%$.

(5) Expected rate of growth per market based DCF model.

(6) Actual rate of growth when DCF cost rate is applied to book value ($\$1.333 \text{ possible earnings} - \$0.960 \text{ dividends} = \$0.373 \text{ for growth} / \$24.00 \text{ market value} = 1.55\%$).

(7) Actual rate of growth when DCF cost rate is applied to book value ($\$3.000 \text{ possible earnings} - \$0.960 \text{ dividends} = \$2.040 \text{ for growth} / \$24.00 \text{ market value} = 8.50\%$).

United Utility Companies, Inc.
Indicated Common Equity Cost Rate
Through Use of the Discounted Cash Flow Model
Summary of Conclusion

	<u>Proxy Group of Nine C. A. Turner Water Companies</u>	<u>Proxy Group of Four Value Line Water Companies</u>
<u>Based upon Historical and Projected Growth in DPS, EPS, and BR+SV</u>		
1. Dividend Yield (1)	3.4 %	3.3 %
2. Dividend Growth Component (2)	<u>0.1</u>	<u>0.1</u>
3. Yield	3.5	3.4
4. Growth Rate (3)	<u>5.4</u>	<u>5.4</u>
5. Indicated Return Rate	<u><u>8.9 %</u></u>	<u><u>8.8 %</u></u>

<u>Based upon Projected Growth in EPS</u>		
6. Dividend Yield (1)	3.4 %	3.3 %
7. Dividend Growth Component (2)	<u>0.1</u>	<u>0.1</u>
8. Yield	3.5	3.4
9. Growth Rate (3)	<u>5.2</u>	<u>6.5</u>
10. Indicated Return Rate	<u><u>8.7 %</u></u>	<u><u>9.9 %</u></u>
11. Conclusion	<u><u>8.8 %</u></u>	<u><u>9.4 %</u></u>

- Notes:
- (1) From Schedule 12.
 - (2) This reflects a growth rate component equal to one-half the conclusion of growth rate (from page 1 of Schedule 14) x Line Nos. 1 and 6 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, $3.4\% \times (1/2 \times 5.4\%) = 0.1\%$.
 - (3) Conclusion of growth from page 1 of Schedule 14.

United Utility Companies, Inc.
Derivation of Dividend Yield for Use in the
Discounted Cash Flow Model

	Dividend Yield				
	Spot (12/20/01) (1)	Average of Last 3 Months (2)	Average of Last 6 Months (3)	Average of Last 12 Months (4)	Average Dividend Yield (5)
<u>Proxy Group of Nine</u> <u>C. A. Turner Water Companies</u>					
American States Water Co.	3.6 %	3.7 %	3.7 %	3.8 %	3.7 %
American Water Works Co., Inc.	2.2	2.3	2.6	2.9	2.5
Artesian Resources Corp.	3.7	4.0	4.1	4.3	4.0
California Water Service Group	4.4	4.3	4.3	4.3	4.3
Connecticut Water Service, Inc.	2.6	2.9	3.1	3.4	3.0
Middlesex Water Company	3.7	3.8	3.7	3.8	3.8
Pennichuck Corporation	3.3	3.4	3.4	3.4	3.4
Philadelphia Suburban Corp.	2.3	2.7	2.6	2.6	2.6
SJW Corporation	3.1	3.1	3.1	3.0	3.1
Average	<u>3.2 %</u>	<u>3.4 %</u>	<u>3.4 %</u>	<u>3.5 %</u>	<u>3.4 %</u>
<u>Proxy Group of Four</u> <u>Value Line Water Companies</u>					
American States Water Co.	3.6 %	3.7 %	3.7 %	3.8 %	3.7 %
American Water Works Co., Inc.	2.2	2.3	2.6	2.9	2.5
California Water Service Group	4.4	4.3	4.3	4.3	4.3
Philadelphia Suburban Corp.	2.3	2.7	2.6	2.6	2.6
Average	<u>3.1 %</u>	<u>3.3 %</u>	<u>3.3 %</u>	<u>3.4 %</u>	<u>3.3 %</u>

- Notes: (1) The spot dividend yield is the current annualized dividend per share divided by the spot market price on 12/20/01.
- (2) The average 3-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the three months ended November 30, 2001.
- (3) The average 6-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the six months ended November 30, 2001.
- (4) The average 12-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the twelve months ended November 30, 2001.
- (5) Equal weight has been given to the 12-month average, 6-month average, 3-month average and spot dividend yield. This provides recognition of current conditions, but does not place undue emphasis thereon.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus Database
quote.yahoo.com

United Utility Companies, Inc.
Current Institutional Holdings (1) and Individual Holdings (2) for
the Proxy Group of Nine C. A. Turner Water Companies and
the Proxy Group of Four Value Line Water Companies

	<u>1</u>	<u>2</u>
	December 2001 Percentage of Institutional Holdings (1)	December 2001 Percentage of Individual Holdings (2)
<u>Proxy Group of Nine C. A. Turner Water Companies</u>		
American States Water Co.	37.9 %	62.1 %
American Water Works Co., Inc.	33.5	66.5
Artesian Resources Corp.	9.6	90.4
California Water Service Group	16.5	83.5
Connecticut Water Service, Inc.	14.0	86.0
Middlesex Water Company	11.3	88.7
Pennichuck Corporation	8.0	92.0
Philadelphia Suburban Corp.	21.2	78.8
SJW Corporation	<u>17.0</u>	<u>83.0</u>
Average	<u>18.8 %</u>	<u>81.2 %</u>
<u>Proxy Group of Four Value Line Water Companies</u>		
American States Water Co.	37.9 %	62.1 %
American Water Works Co., Inc.	33.5	66.5
California Water Service Group	16.5	83.5
Philadelphia Suburban Corp.	<u>17.0</u>	<u>83.0</u>
Average	<u>26.1 %</u>	<u>73.8 %</u>

Notes: (1) The percentage of institutional holdings is calculated by dividing the number of shares held by institutions by the number of shares outstanding.

(2) (1 - column 1).

Source of Information: <http://yahoo.marketguide.com/mgi/performance>

Source of Information: Value Line Investment Survey, November 2, 2001, Standard Edition
ThomsonFN First Call Earnings, www.thomsoninvest.net, Updated November 30, 2001

United Utility Companies, Inc.
Calculation of Historical BR + SV

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
	<u>BR (1)</u>	<u>S Factor (2)</u>	<u>V Factor (3)</u>	<u>SV (4)</u>	<u>BR + SV (5)</u>
<u>Proxy Group of Nine</u>					
<u>C. A. Turner Water Companies</u>					
American States Water Co.	2.6 %	5.3 %	34.8 %	1.8 %	4.4 %
American Water Works Co., Inc.	4.6	8.1	41.0	3.3	7.9
Artesian Resources Corp.	1.8	16.7	29.5	4.9	6.7
California Water Service Group	3.7	4.1	47.7	2.0	5.7
Connecticut Water Service, Inc.	3.0	1.8	48.2	0.9	3.9
Middlesex Water Company	1.8	4.2	45.5	1.9	3.7
Pennichuck Corporation	4.9	11.8	30.2	3.6	8.5
Philadelphia Suburban Corp.	0.0	13.2	60.9	8.0	8.0
SJW Corporation	<u>6.2</u>	<u>0.0</u>	<u>37.8</u>	<u>0.0</u>	<u>6.2</u>
Average	<u>3.2 %</u>	<u>7.2 %</u>	<u>41.7 %</u>	<u>2.9 %</u>	<u>6.1 %</u>
 <u>Proxy Group of Four</u>					
<u>Value Line Water Companies</u>					
American States Water Co.	2.6	5.3	34.8	1.8 %	4.4 %
American Water Works Co., Inc.	4.6	8.1	41.0	3.3	7.9
California Water Service Group	3.7	4.1	47.7	2.0	5.7
Philadelphia Suburban Corp.	<u>6.2</u>	<u>0.0</u>	<u>37.8</u>	<u>0.0</u>	<u>6.2</u>
Average	<u>4.3 %</u>	<u>4.4 %</u>	<u>40.3 %</u>	<u>1.8 %</u>	<u>6.1 %</u>

- Notes: (1) From column 6, pages 3 and 4 of this Schedule.
(2) From column 12, page 5 of this Schedule.
(3) From column 7, page 6 of this Schedule.
(4) Column 2 * column 3.
(5) Column 1 + column 4.

United Utility Companies, Inc.
Historical Internal Growth Rate (1), i.e., BR, for
the Proxy Group of Nine C. A. Turner Water Companies
for the Years 1996 -2000

	1	2	3	4	5	6
						Five-Year Average 1996-2000 Internal Growth Rate, i.e., BR
	2000	1999	1998	1997	1996	
<u>Proxy Group of Nine C. A. Turner Water Companies</u>						
<u>American States Water Co.</u>						
Common Equity Return Rate	10.24 %	10.23 %	9.52 %	9.38 %	9.96 %	
Retention Ratio	32.06	28.40	22.34	20.16	27.65	
Internal Growth Rate (1)	3.28	2.91	2.13	1.89	2.75	2.6 %
<u>American Water Works Co., Inc.</u>						
Common Equity Return Rate	9.52 %	9.39 %	10.67 %	10.47 %	10.41 %	
Retention Ratio	41.66	43.33	48.23	47.82	47.49	
Internal Growth Rate (1)	3.97	4.07	5.15	5.01	4.94	4.6 %
<u>Artesian Resources Corp.</u>						
Common Equity Return Rate	7.39 %	9.74 %	9.77 %	7.30 %	7.60 %	
Retention Ratio	8.12	27.74	34.04	14.43	19.05	
Internal Growth Rate (1)	0.60	2.70	3.33	1.05	1.45	1.8 %
<u>California Water Service Group</u>						
Common Equity Return Rate	10.54 %	11.43 %	10.96 %	14.55 %	12.56 %	
Retention Ratio	18.03	30.37	25.98	42.50	30.89	
Internal Growth Rate (1)	1.90	3.47	2.85	6.18	3.88	3.7
<u>Connecticut Water Service, Inc.</u>						
Common Equity Return Rate	12.44 %	12.38 %	12.15 %	12.25 %	12.37 %	
Retention Ratio	26.06	25.72	23.75	22.92	22.41	
Internal Growth Rate (1)	3.24	3.18	2.89	2.81	2.77	3.0
<u>Middlesex Water Company</u>						
Common Equity Return Rate	7.16 %	11.05 %	10.52 %	11.22 %	10.34 %	
Retention Ratio	(21.76)	22.73	19.59	15.51	8.07	
Internal Growth Rate (1)	(1.56)	2.51	2.06	1.74	0.83	1.8 (2)
<u>Pennichuck Corporation</u>						
Common Equity Return Rate	13.43 %	10.25 %	10.90 %	9.55 %	9.73 %	
Retention Ratio	53.81	39.22	53.94	38.37	38.93	
Internal Growth Rate (1)	7.23	4.02	5.88	3.66	3.79	4.9
<u>Philadelphia Suburban Corp.</u>						
Common Equity Return Rate	13.32 %	12.17 %	13.53 %	12.49 %	11.84 %	
Retention Ratio	42.40	27.15	36.02	29.85	25.12	
Internal Growth Rate (1)	5.65	3.30	4.87	3.73	2.97	4.1
<u>SJW Corporation</u>						
Common Equity Return Rate	8.00 %	12.93 %	11.00 %	12.63 %	13.88 %	
Retention Ratio	39.12	61.41	52.50	53.68	53.54	
Internal Growth Rate (1)	3.13	7.94	5.78	6.78	7.43	6.2
Average						3.6 %

Notes: (1) The internal growth rate is calculated by multiplying the common equity return rate by the retention ratio (100% minus the dividend payout ratio). All data are on a consolidated basis.
(2) Excludes negatives.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus Database

United Utility Companies, Inc.
Historical Internal Growth Rate (1), i.e., BR, for
the Proxy Group of Four Value Line Water Companies
for the Years 1996 -2000

	1	2	3	4	5	6
						Five-Year Average 1996-2000 Internal Growth Rate, i.e., BR
	<u>2000</u>	<u>1999</u>	<u>1998</u>	<u>1997</u>	<u>1996</u>	
<u>Proxy Group of Four Value Line Water Companies</u>						
<u>American States Water Co.</u>						
Common Equity Return Rate	10.24 %	10.23 %	9.52 %	9.38 %	9.96 %	
Retention Ratio	32.06	28.40	22.34	20.16	27.65	
Internal Growth Rate (1)	3.28	2.91	2.13	1.89	2.75	2.6 %
<u>American Water Works Co., Inc.</u>						
Common Equity Return Rate	9.52 %	9.39 %	10.67 %	10.47 %	10.41 %	
Retention Ratio	41.66	43.33	48.23	47.82	47.49	
Internal Growth Rate (1)	3.97	4.07	5.15	5.01	4.94	4.6 %
<u>California Water Service Group</u>						
Common Equity Return Rate	10.54 %	11.43 %	10.96 %	14.55 %	12.56 %	
Retention Ratio	18.03	30.37	25.98	42.50	30.89	
Internal Growth Rate (1)	1.90	3.47	2.85	6.18	3.88	3.7
<u>Philadelphia Suburban Corp.</u>						
Common Equity Return Rate	13.32 %	12.17 %	13.53 %	12.49 %	11.84 %	
Retention Ratio	42.40	27.15	36.02	29.85	25.12	
Internal Growth Rate (1)	5.65	3.30	4.87	3.73	2.97	4.1
Average						<u>3.8 %</u>

Notes: (1) The internal growth rate is calculated by multiplying the common equity return rate by the retention ratio (100% minus the dividend payout ratio). All data are on a consolidated

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus Database

United Utility Companies, Inc.
Calculation of Five Year Average Growth in Common Shares Outstanding (1), i.e., S Factor

1	2	3	4	5	6	7	8	9	10	11	12
1995 Common Shares Outstanding (1)	95-96 Growth	1996 Common Shares Outstanding (1)	96-97 Growth	1997 Common Shares Outstanding (1)	97-98 Growth	1998 Common Shares Outstanding (1)	98-99 Growth	1999 Common Shares Outstanding (1)	99-00 Growth	2000 Common Shares Outstanding (1)	Five Year Average Common Share Growth
Proxy Group of Nine											
C. A. Turner Water Companies											
American States Water Co.	7.845	8,886	0.8 %	8,958	0.0 %	8,958	0.0 %	8,958	12.5 %	10,080	5.3 %
American Water Works Co., Inc.	67,826	78,421	1.6	79,686	1.5	80,895	20.1	97,194	1.5	98,691	8.1
Artesian Resources Corp.	1,037	1,748	1.8	1,780	1.3	1,803	10.8	1,998	0.8	2,013	16.7
California Water Service Group	12,538	12,620	0.7	12,620	0.0	12,619	2.5	12,936	17.1	15,146	4.1
Connecticut Water Service, Inc.	4,451	4,518	0.2	4,527	0.2	4,536	6.7	4,839	0.3	4,853	1.8
Middlesex Water Company	4,137	4,205	1.5	4,269	14.7	4,897	2.1	5,001	1.0	5,049	4.2
Pennichuck Corporation	1,078	1,118	3.7	1,134	50.8	1,710	2.2	1,747	0.9	1,762	11.8
Philadelphia Suburban Corp.	30,472	31,998	5.0	32,766	5.8	34,659	47.9	51,266	4.7	53,676	13.2
SWW Corporation	3,251	3,170	(2.5)	3,170	(0.1)	3,168	(3.9)	3,045	0.0	3,045	0.0 (2)
Average											7.2 %
Proxy Group of Four											
Value Line Water Companies											
American States Water Co.	7.845	8,886	0.8 %	8,958	0.0 %	8,958	0.0 %	8,958	12.5 %	10,080	5.3 %
American Water Works Co., Inc.	67,826	78,421	1.6	79,686	1.5	80,895	20.1	97,194	1.5	98,691	8.1
California Water Service Group	12,538	12,620	0.7	12,620	0.0	12,619	2.5	12,936	17.1	15,146	4.1
Philadelphia Suburban Corp.	30,472	31,998	5.0	32,766	5.8	34,659	47.9	51,266	4.7	53,676	12.3
Average											7.5 %

Notes: (1) Year-end shares outstanding.
(2) Excludes negatives.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus Database

United Utility Companies, Inc.
Calculation of the Premium/Discount of a
Company's Stock Price Relative to its Book Value, i.e., V Factor

1	2	3	4	5	6	7
1996 Market to Book Ratio (1)	1997 Market to Book Ratio (1)	1998 Market to Book Ratio (1)	1999 Market to Book Ratio (1)	2000 Market to Book Ratio (1)	Five Year Average Market to Book Ratio	V Factor (2)
Proxy Group of Nine						
C. A. Turner Water Companies						
American States Water Co.	133.9 %	147.8 %	177.2 %	170.8 %	153.4 %	34.8 %
American Water Works Co., Inc.	155.5	199.0	171.9	143.2	169.5	41.0
Artesian Resources Corp.	101.9	156.4	168.0	163.3	141.9	29.5
California Water Service Group	159.2	206.6	201.5	197.1	191.1	47.7
Connecticut Water Service, Inc.	155.6	192.8	218.0	231.1	193.1	48.2
Middlesex Water Company	149.6	175.6	218.2	209.9	183.5	45.5
Pennichuck Corporation	106.5	149.6	189.2	170.2	143.2	30.2
Philadelphia Suburban Corp.	188.5	312.6	287.1	252.9	255.5	60.9
SJW Corporation	112.5	136.9	192.8	229.3	160.9	37.8
Average					176.9 %	41.7 %
Proxy Group of Four						
Value Line Water Companies						
American States Water Co.	133.9 %	147.8 %	177.2 %	170.8 %	153.4 %	34.8 %
American Water Works Co., Inc.	155.5	199.0	171.9	143.2	169.5	41.0
California Water Service Group	159.2	206.6	201.5	197.1	191.1	47.7
Philadelphia Suburban Corp.	188.5	312.6	287.1	252.9	255.5	60.9
Average					192.4 %	46.1 %

Notes: (1) Market to Book Ratio = average of yearly high-low market price divided by the average of beginning and ending year's balance of book common equity per share.
(2) (1 - (100 / column 6)).

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus Database

United Utility Companies, Inc.
Calculation of Projected BR + SV

1	2	3	4	5	6	7	8	9	10	11
Common Shares Outstanding (1) (000,000)		Projected 2004 - 2006 (1)								
Actual 2000	Projected 2004-2006	S Factor (2)	High Stock Price	Low Stock Price	Book Value	Average Stock Price (3)	V Factor (4)	SV (5)	BR (6)	BR + SV (7)
Proxy Group of Nine										
C. A. Turner Water Companies										
American States Water Co.	10.08	0.0 %	\$40.0	\$25.0	\$22.10	\$32.50	32.0 %	0.0 %	5.5 %	5.5 %
American Water Works Co., Inc.	98.82	1.2	45.0	35.0	20.45	40.00	48.9	0.6	8.0	8.6
Artesian Resources Corp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
California Water Service Group	15.15	0.5	30.0	25.0	14.85	27.50	46.0	0.2	5.5	5.7
Connecticut Water Service, Inc.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Middlesex Water Company	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pennichuck Corporation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Philadelphia Suburban Corp.	67.09	0.9	30.0	20.0	8.85	25.00	64.6	0.6	5.9	6.5
SJW Corporation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average		0.7 %					47.9 %	0.4 %	6.2 %	6.6 %
Proxy Group of Four										
Value Line Water Companies										
American States Water Co.	10.08	0.0	\$40.0	\$25.0	\$22.10	\$32.50	32.0 %	0.0 %	5.5 %	5.5 %
American Water Works Co., Inc.	98.82	1.2	45.0	35.0	20.45	40.00	48.9	0.6	8.0	8.6
California Water Service Group	15.15	0.5	30.0	25.0	14.85	27.50	46.0	0.2	5.5	5.7
Philadelphia Suburban Corp.	67.09	0.9	30.0	20.0	8.85	25.00	64.6	0.6	5.9	6.5
Average		0.7 %					47.9 %	0.4 %	6.2 %	6.6 %

- Notes:
- (1) From pages 9 through 12 of this Schedule.
 - (2) The S Factor is the five year compound growth rate between the 2000 and 2005 (mid-point of 2004-2006 projection) common shares outstanding.
 - (3) The Average Stock Price is the average of column 4 and column 5.
 - (4) (1 - (column 6 / column 7))
 - (5) Column 3 * column 8.
 - (6) From page 8, column 14 of this Schedule.
 - (7) Column 9 + column 10.

Source of Information: Value Line Investment Survey, November 2, 2001, Standard Edition

United Utility Companies, Inc.
Projected Internal Growth Rate

1	2	3	4	5	6	7	8	9	10	11	12	13	14			
2000														2004-2006		
Common Equity (%) (1)	Total Capital (\$ mil) (1)	Common Equity (\$ mil) (2)	Common Equity (%) (1)	Total Capital (\$ mil) (1)	Common Equity (\$ mil) (3)	Annual Common Equity Growth Rate (4)	ROE Adjustment Factor (5)	Return on Common Equity (1)	Return on Average Common Equity (6)	2004-2006		Retention Ratio (7)	Projected Internal Growth (8)			
										EPS (1)	DPS (1)					
Proxy Group of Nine																
C. A. Turner Water Companies																
American States Water Co.	51.90	%	\$371.10	\$192.60	52.00	%	\$430.00	\$223.60	3.03	1.01	12.00	12.12	\$2.60	\$1.42	45.4	5.5
American Water Works Co., Inc.	41.80		3,993.50	1,669.28	41.00		5,260.00	2,156.60	5.26	1.03	13.00	13.39	2.65	1.07	59.6	8.0
Artisan Resources Corp.	NA		NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
California Water Service Group	50.20		388.80	195.18	44.00		520.00	228.80	3.23	1.02	13.50	13.77	2.00	1.20	40.0	5.5
Connecticut Water Service, Inc.	NA		NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Middlesex Water Company	NA		NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pennichuck Corporation	NA		NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Philadelphia Suburban Corp.	47.80		901.10	430.73	49.00		1,270.00	622.30	7.64	1.04	12.50	13.00	1.10	0.60	45.5	5.9
SIW Corporation	NA		NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average																6.2 %
Proxy Group of Four																
Value Line Water Companies																
American States Water Co.	51.90		371.10	192.60	52.00		430.00	223.60	3.03	1.01	12.00	12.12	2.60	1.42	45.4	5.5
American Water Works Co., Inc.	41.80		3,993.50	1,669.28	41.00		5,260.00	2,156.60	5.26	1.03	13.00	13.39	2.65	1.07	59.6	8.0
California Water Service Group	50.20		388.80	195.18	44.00		520.00	228.80	3.23	1.02	13.50	13.77	2.00	1.20	40.0	5.5
Philadelphia Suburban Corp.	47.80		901.10	430.73	49.00		1,270.00	622.30	7.64	1.04	12.50	13.00	1.10	0.60	45.5	5.9
Average																6.2 %

Notes: (1) From pages 9 through 12 of this Schedule.

(2) Column 1 * column 2.

(3) Column 4 * column 5.

(4) Five year compound growth rate in common equity from 2000 to 2004-2006 or ((column 6 / column 3) ^ .20) - 1).

(5) 2 * ((1 + column 7) / (2 + column 7)).

(6) Column 8 * column 9.

(7) 1 - (column 12 / column 11).

(8) Column 10 * column 13.

Source of Information: Value Line Investment Survey, November 2, 2001, Standard Edition

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	40
Earnings Predictability	75

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Company's Financial Strength	B++
Stock's Price Stability	80
Price Growth Persistence	45
Earnings Predictability	65

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PHILA. SUBURBAN NYSE-PSC		RECENT PRICE	22.00	P/E RATIO	25.6 (Trailing: 27.0 Median: 15.0)	RELATIVE P/E RATIO	1.49	DIV'D YLD	2.3%	VALUE LINE								
TIMELINESS	2 Raised 10/5/01	High: 4.8	5.2	5.3	6.6	6.3	6.9	9.5	14.2	19.2	19.2	20.0	24.6					
SAFETY	2 Raised 8/11/95	Low: 3.3	3.8	4.4	5.0	5.5	5.6	6.6	7.3	12.1	12.6	10.6	15.7					
TECHNICAL	3 Lowered 9/14/01																	
BETA .55 (1.00 = Market)																		
2004-06 PROJECTIONS		Price	30	Gain	(+35%)	Ann'l Total Return	10%											
High	30	Low	20	Options	2 0 0 1 0 0 1 0 0 0 1	to Buy	0 0 0 0 0 0 0 1 0 0	to Sell	2 0 0 1 0 0 0 0 0 1									
Insider Decisions		D	J	F	M	A	M	J	J	A								
Institutional Decisions		4Q2000	1Q2001	2Q2001			Percent shares traded	4.5										
		to Buy	64	57	54			to Buy	46	49	45							
		to Sell	14403	14541	14456			to Sell	14403	14541	14456							
														% TOT. RETURN 9/01				
														THIS STOCK	VL ARITH. INDEX			
														1 yr.	16.3	-10.6		
														3 yr.	9.3	26.3		
														5 yr.	158.6	55.1		

United Utility Companies, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		<u>Proxy Group of Nine C. A. Turner Water Companies</u>	<u>Proxy Group of Four Value Line Water Companies</u>
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	7.0 %	7.0 %
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	<u>0.6 (2)</u>	<u>0.6 (2)</u>
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	7.6 %	7.6 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	<u>0.0 (3)</u>	<u>(0.1) (4)</u>
5.	Adjusted Prospective Bond Yield	7.6	7.5
6.	Equity Risk Premium (5)	<u>5.2</u>	<u>5.2</u>
7.	Risk Premium Derived Common Equity Cost Rate	<u>12.8 %</u>	<u>12.7 %</u>

Notes: (1) Derived in Note (3) on page 6 of this Schedule.

(2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.61%, rounded to 0.6%, from page 4 of this Schedule.

(3) One-sixth of the average yield spread of A over Aa rated public utility bonds of 0.17% ($1 / 6 \times 0.17\% = 0.028\%$, rounded to 0.0%) in order to reflect the average A1 / A2 Moody's bond rating of the proxy group.

(4) One-third of the average yield spread of A over Aa rated public utility bonds of 0.17% ($1 / 3 \times 0.17\% = 0.057\%$, rounded to 0.1%) in order to reflect the average A1 Moody's bond rating of the proxy group.

(5) From page 5 of this Schedule.

United Utility Companies, Inc.
Comparison of Bond Ratings and Business Profile for
the Proxy Group of Nine C. A. Turner Water Companies
and the Proxy Group of Four Value Line Water Companies

	<u>November 2001</u> <u>Moody's</u> <u>Bond Rating</u>		<u>November 2001</u> <u>Standard & Poor's</u> <u>Bond Rating</u>		<u>Standard & Poor's Business</u> <u>Position / Profile</u> <u>(2)</u>
	<u>Bond</u> <u>Rating</u>	<u>Numerical</u> <u>WNineing (1)</u>	<u>Bond</u> <u>Rating</u>	<u>Numerical</u> <u>WNineing (1)</u>	
<u>Proxy Group of Nine</u> <u>C. A. Turner Water Companies</u>					
American States Water Co. (3)	A1	5	A+	5	3.0
American Water Works Co., Inc. (4)	A3	7	A+	5	3.0
Artesian Resources Corp.	NR	--	NR	--	--
California Water Service Group (5)	Aa3	4	AA-	4	3.0
Connecticut Water Service, Inc.	NR	--	NR	--	--
Middlesex Water Company	A2	6	A+	5	3.0
Pennichuck Corporation	NR	--	NR	--	--
Philadelphia Suburban Corp. (6)	NR	--	AA-	4	2.0
SJW Corporation	NR	--	NR	--	--
Average	<u>A1 / A2</u>	<u>5.5</u>	<u>A+</u>	<u>4.6</u>	<u>2.8</u>
<u>Proxy Group of Four</u> <u>Value Line Water Companies</u>					
American States Water Co. (3)	A1	5	A+	5	3.0
American Water Works Co., Inc. (4)	A3	7	A+	5	3.0
California Water Service Group (5)	Aa3	4	AA-	4	3.0
Philadelphia Suburban Corp. (6)	NR	--	AA-	4	2.0
Average	<u>A1</u>	<u>5.3</u>	<u>AA- / A+</u>	<u>4.5</u>	<u>2.8</u>

- Notes: (1) From page 3 of this Schedule.
(2) From Standard & Poor's Utilities & Perspectives, Global Utilities Ratings Service, Vol. 10, No. 50, December 17, 2001.
(3) Ratings and business profile are those of Southern California Water Company
(4) Ratings are a composite of those of New Jersey - American Water Company, Pennsylvania - American Water Company and St. Louis County Water. Business profile is that of New Jersey - American Water Company.
(5) Ratings and business profile are those of California Water Service Company.
(6) Ratings and business profile are those of Philadelphia Suburban Water Company.

Source of Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

United Utility Companies, Inc.
Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

<u>Moody's Bond Rating</u>	<u>Numerical Bond Weighting</u>	<u>Standard & Poor's Bond Rating</u>
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-

Moody's
Comparison of Interest Rate Trends
for Investor-Owned Public Utility Companies
for the Twelve Months Ending November 2001 (1)

Years	Corporate Bonds	Public Utility Bonds				Spread - Corporate v. Public Utility Bonds			Spread - Public Utility Bonds	
	Aaa Rated	Aaa Rated	Aa Rated	A Rated	Baa Rated	Aaa (Pub. Util.) over Aaa (Corp.)	Aa (Pub. Util.) over Aaa (Corp.)	A (Pub. Util.) over Aaa (Corp.)	A over Aa	Baa over A
Dec. 2000	7.21 %	7.51 %	7.79 %	7.84 %	8.01 %					
Jan. 2001	7.15	7.53	7.73	7.80	7.99					
Feb. 2001	7.10	7.46	7.62	7.44	7.94					
Mar. 2001	6.98	7.31	7.51	7.68	7.85					
Apr. 2001	7.20	7.53	7.72	7.94	8.06					
May 2001	7.29	7.61	7.79	7.99	8.11					
Jun. 2001	7.18	7.50	7.62	7.85	8.02					
Jul. 2001	7.13	7.46	7.55	7.78	8.05					
Aug. 2001	7.02	7.36	7.36	7.59	7.95					
Sep. 2001	7.17	7.52	7.55	7.75	8.12					
Oct. 2001	7.03	7.45	7.47	7.63	8.02					
Nov. 2001	6.97	7.45	7.45	7.57	7.96					
Average of Last 3 Months	7.06 %	7.47 %	7.49 %	7.65 %	8.03 %	0.41 %	0.43 %	0.59 %	0.97 %	0.38 %
Average of Last 6 Months	7.08 %	7.46 %	7.50 %	7.70 %	8.02 %	0.38 %	0.42 %	0.62 %	0.94 %	0.32 %
Average of Last 12 Months	7.12 %	7.47 %	7.60 %	7.74 %	8.01 %	0.35 %	0.48 %	0.62 %	0.89 %	0.27 %
Average Spread (2)						0.38 %	0.44 %	0.61 %	0.93 %	0.32 %

Notes: (1) All yields are distributed yields.
(2) Equal weight has been given to the 12-month average, 6-month average, and 3-month average. This provides recognition of current conditions, but does not place undue emphasis thereon.

Source of Information: Mergen Bond Record

United Utility Companies, Inc.
Judgment of Equity Risk Premium for
the Proxy Group of Nine C. A. Turner Water Companies and the
Proxy Group of Four Value Line Water Companies

<u>Line No.</u>	<u>Proxy Group of Nine C. A. Turner Water Companies</u>	<u>Proxy Group of Four Value Line Water</u>
1.	Calculated equity risk premium based on the total market using the beta approach (1)	
	5.2 %	5.2 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	
	<u>5.2</u>	<u>5.2</u>
3.	Average equity risk premium	
	<u><u>5.2 %</u></u>	<u><u>5.2 %</u></u>

Notes: (1) From page 6 of this Schedule.
(2) From page 8 of this Schedule.

United Utility Companies, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the Proxy Group of Nine C. A. Turner Water Companies
and the Proxy Group of Four Value Line Water Companies

Line No.		<u>Proxy Group of Nine C. A. Turner Water Companies</u>	<u>Proxy Group of Four Value Line Water</u>
1.	Arithmetic mean total return rate on the Standard & Poor's 500 Composite Index - 1926-2000 (1)	13.0 %	13.0 %
2.	Arithmetic mean total return rate on the Salomon Brothers Long-Term High-Grade Corporate Bond Index 1926-2000 (1)	<u>(6.0)</u>	<u>(6.0)</u>
3.	Historical Equity Risk Premium	<u>7.0 %</u>	<u>7.0 %</u>
4.	Forecasted 3-5 year Total Annual Market Return (2)	17.1 %	17.1 %
5.	Prospective Yield an Aaa Rated Corporate Bonds (3)	<u>(7.0)</u>	<u>(7.0)</u>
6.	Forecasted Equity Risk Premium	<u>10.1 %</u>	<u>10.1 %</u>
7.	Average of Historical and Forecasted Equity Risk Premium (4)	8.6 %	8.6 %
8.	Adjusted Value Line Beta (5)	<u>0.60</u>	<u>0.60</u>
9.	Beta Adjusted Equity Risk Premium	<u>5.2 %</u>	<u>5.2 %</u>

- Notes: (1) From Stocks, Bonds, Bills and Inflation - 2001 Yearbook Valuation Edition - Market Results for 1926-2000, Ibbotson Associates, Inc., Chicago, IL, 2001.
- (2) From Note 1, page 4 of Schedule 14.
- (3) Average forecast based upon six quarterly estimates of Aaa rated corporate bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated December 1, 2001 (see page 7 of this Schedule). The estimates are detailed below.

Fourth Quarter 2001	6.9 %
First Quarter 2002	6.8
Second Quarter 2002	6.8
Third Quarter 2002	6.9
Fourth Quarter 2002	7.0
First Quarter 2003	<u>7.3</u>
Average	<u>7.0 %</u>

- (4) Average of the Historical Equity Risk Premium of 7.0% from Line No. 3 and the Forecasted Equity Risk Premium of 10.0% from Line No. 6 $((7.0\% + 10.0\%) / 2 = 8.5\%)$.
- (5) From page 9 of this Schedule.

2 ■ BLUE CHIP FINANCIAL FORECASTS ■ DECEMBER 1, 2001

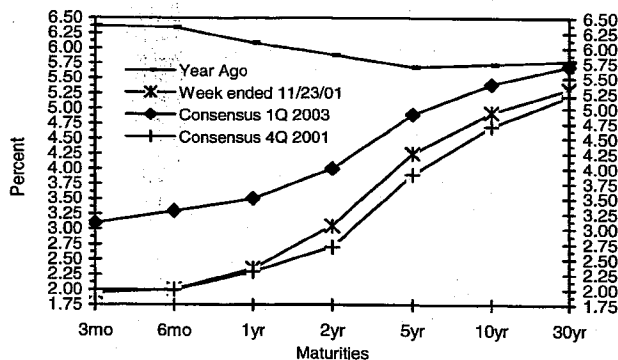
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions¹

	History								Consensus Forecasts - Quarterly Avg.					
	Avg. For Week Ending				Month			Latest Q	4Q	1Q	2Q	3Q	4Q	1Q
Interest Rates	Nov.23	Nov.16	Nov.9	Nov.2	Oct.	Sep.	Aug.	3Q 2001	2001	2002	2002	2002	2002	2003
Federal Funds Rate	2.01	2.03	2.36	2.55	2.49	3.07	3.65	3.50	2.1	1.8	1.9	2.2	2.7	3.2
Prime Rate	5.00	5.00	5.43	5.50	5.53	6.28	6.67	6.57	5.1	4.8	4.9	5.2	5.7	6.2
LIBOR, 3-mo.	2.13	2.06	2.06	2.22	2.40	3.04	3.64	3.48	2.2	2.0	2.1	2.5	2.9	3.4
Commercial Paper, 1-mo.	2.02	2.00	2.02	2.23	2.40	2.96	3.53	3.40	2.1	2.0	2.1	2.4	2.9	3.3
Treasury bill, 3-mo.	1.95	1.90	1.87	2.05	2.20	2.69	3.44	3.24	2.0	1.8	1.9	2.2	2.6	3.1
Treasury bill, 6-mo.	2.01	1.96	1.83	1.98	2.17	2.71	3.39	3.22	2.0	2.0	2.1	2.4	2.9	3.3
Treasury bill, 1 yr.	2.35	2.24	1.99	2.11	2.33	2.82	3.47	3.30	2.3	2.3	2.4	2.7	3.1	3.5
Treasury note, 2 yr.	3.05	2.83	2.40	2.49	2.73	3.12	3.76	3.64	2.7	2.8	3.1	3.3	3.7	4.0
Treasury note, 5 yr.	4.25	3.97	3.58	3.73	3.91	4.12	4.57	4.48	3.9	4.0	4.2	4.3	4.6	4.9
Treasury note, 10 yr.	4.93	4.66	4.30	4.37	4.57	4.73	4.97	4.98	4.7	4.7	4.8	5.0	5.1	5.4
Treasury bond, 30 yr.	5.32	5.12	4.85	5.02	5.32	5.48	5.48	5.52	5.2	5.2	5.2	5.4	5.5	5.7
Corporate Aaa bond	7.16	6.97	6.75	6.86	7.03	7.17	7.02	7.11	6.9	6.8	6.8	6.9	7.0	7.3
Corporate Baa bond	7.96	7.81	7.62	7.73	7.91	8.03	7.85	7.95	7.8	7.7	7.7	7.7	7.8	8.0
State & Local bonds	5.14	5.02	4.91	4.96	5.05	5.09	5.03	5.11	4.9	4.9	4.9	5.0	5.1	5.3
Home mortgage rate	6.75	6.51	6.45	6.56	6.62	6.82	6.95	6.97	6.7	6.6	6.7	6.8	7.0	7.3
	History								Consensus Forecasts - Quarterly Avg.					
Key Assumptions	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q
	1999	2000	2000	2000	2000	2001	2001	2001	2001	2002	2002	2002	2002	2003
Major Currency Index	92.7	94.7	97.5	99.2	102.3	101.9	105.3	104.4	104.1	103.6	103.4	103.3	103.4	103.5
Real GDP	8.3	2.3	5.7	1.3	1.9	1.3	0.3	-1.1	-1.6	0.4	2.8	3.8	3.9	3.5
GDP Price Index	1.8	3.8	2.1	1.9	1.8	3.3	2.1	2.2	1.3	1.7	1.8	1.8	1.9	2.1
Consumer Price Index	3.1	4.3	2.8	3.5	3.0	4.2	3.0	0.7	1.1	1.9	2.2	2.3	2.3	2.5

¹Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal* and *Telerate*. Definitions reported here are same as those in FRSR H.15. All Treasury yields are reported on a constant maturity basis. Historical data for the U.S. Federal Reserve Board's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

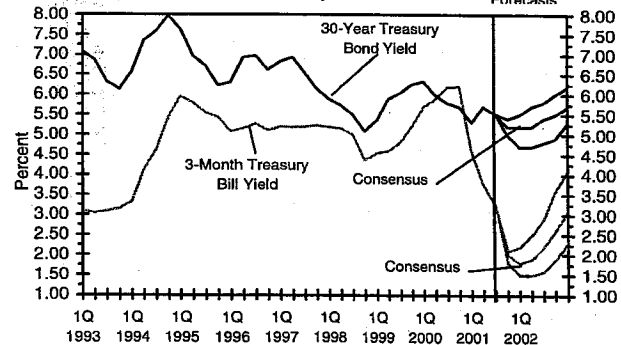
U.S. Treasury Yield Curve

Week ended November 23, 2001 and Year Ago vs.
4Q 2001 and 1Q 2003 Consensus forecasts



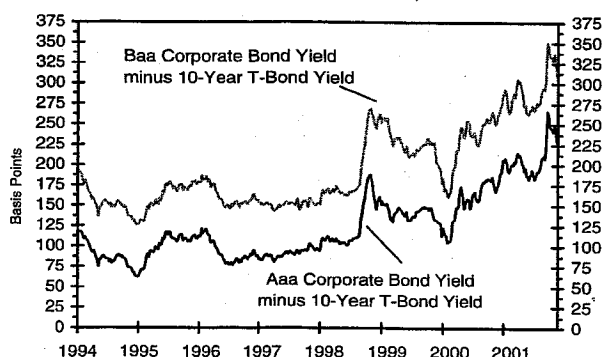
U.S. 3-Mo. T-Bills & 30-Yr. T-Bonds

(Quarterly Average)
History Blue Chip Forecasts



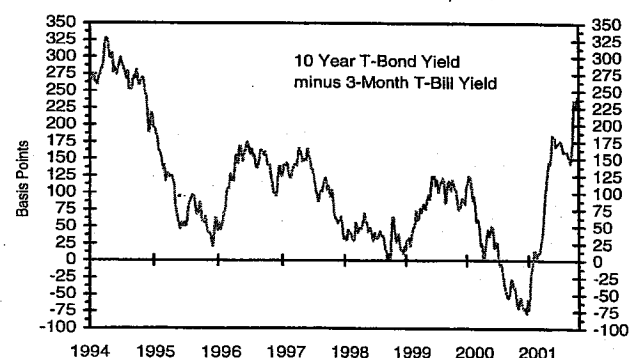
Corporate Bond Spreads

As of week ended November 23, 2001



U.S. Treasury Yield Curve

As of week ended November 23, 2001



United Utility Companies, Inc.
Derivation of Mean Equity Risk Premium Based on a Study
Using Holding Period Returns of Public Utilities

<u>Line No.</u>		<u>Over A Rated Public Utility Bonds AUS Consultants - Utility Services Study (1)</u>
		<u>1</u>
Time Period		1928-2000
1.	Arithmetic Mean Holding Period Returns (2): Standard & Poor's Public Utility Index	11.7 %
2.	Salomon Brothers Long-Term High-Grade Corporate Bond Index	<u>(6.0)</u>
3.	Equity Risk Premium	5.7
4.	Adjustment to reflect yield spread between A rated public utility bonds and bonds used in the study	<u>(0.5) (3)</u>
5.	Adjusted Equity Risk Premium	<u><u>5.2 %</u></u>

- Notes: (1) S&P Public Utility Index and Long-Term Corporate Bonds (Salomon Brothers Long-Term High-Grade Corporate Bond Index year-by-year total returns 1928-2000, AUS Consultants - Utility Services, 2001.
- (2) Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.
- (3) Spread calculated as the difference in the arithmetic mean yields on A rated public utility bonds of 6.60% and Aaa and Aa rated corporate bonds of 6.14% used as a proxy for the Salomon Brothers Long-Term High-Grade Corporate Bond Index for the years 1928-2000, inclusive, 0.46%, rounded to 0.5%.

United Utility Companies, Inc.
Value Line Adjusted Betas for
the Proxy Group of Nine C. A. Turner Water Companies and the
Proxy Group of Four Value Line Water Companies

	<u>Value Line Adjusted Beta</u>
<u>Proxy Group of Nine C. A. Turner Water Companies</u>	
American States Water Co.	0.65
American Water Works Co., Inc.	0.55
Artesian Resources Corp.	NA
California Water Service Group	0.65
Connecticut Water Service, Inc.	NA
Middlesex Water Company	NA
Pennichuck Corporation	NA
Philadelphia Suburban Corp.	0.55
SJW Corporation	NA
Average	<u>0.60</u>
 <u>Proxy Group of Four Value Line Water Companies</u>	
American States Water Co.	0.65
American Water Works Co., Inc.	0.55
California Water Service Group	0.65
Philadelphia Suburban Corp.	0.55
Average	<u>0.60</u>

NA = Not Available

Source of Information: Value Line Investment Survey,
November 2, 2001, Standard Edition

United Utility Companies, Inc.
of the Capital Asset Pricing Model for
the Proxy Group of Nine C. A. Turner Water Companies
and the Proxy Group of Four Value Line Water Companies

Line No.		<u>Proxy Group of Nine C. A. Turner Water Companies</u>	<u>Proxy Group of Four Value Line Water Companies</u>
	<u>Traditional Capital Asset Pricing Model</u>		
1.	Risk-Free Rate (1)	5.4 %	5.4 %
2.	Average Company-Specific Market Premium (2)	<u>5.9</u>	<u>5.9</u>
3.	Capital Asset Pricing Model Derived Company Equity Cost Rate	<u>11.3 %</u>	<u>11.3 %</u>
	<u>Empirical Capital Asset Pricing Model</u>		
4.	Risk-Free Rate (1)	5.4 %	5.4 %
5.	Average Company-Specific Market Premium (3)	<u>6.9</u>	<u>6.9</u>
6.	Capital Asset Pricing Model Derived Company Equity Cost Rate	<u>12.3 %</u>	<u>12.3 %</u>
7.	Conclusion	<u>11.8 %</u>	<u>11.8 %</u>

Notes: (1) Developed in note 2 of page 4 of this Schedule.
(2) Developed on page 2 of this Schedule.
(3) Developed on page 3 of this Schedule.

United Utility Companies, Inc.
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model

<u>Value Line Adjusted Beta</u>	<u>Company-Specific Risk Premium Based on Market Premium of 9.8% (1)</u>	<u>CAPM Result Including Risk-Free Rate of 5.4% (2)</u>
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Traditional Capital Asset Pricing Model (3)

Proxy Group of Nine

C. A. Turner Water Companies

American States Water Co.	0.65	6.4 %	11.8 %
American Water Works Co., Inc.	0.55	5.4	10.8
Artesian Resources Corp.	NA	NA	NA
California Water Service Group	0.65	6.4	11.8
Connecticut Water Service, Inc.	NA	NA	NA
Middlesex Water Company	NA	NA	NA
Pennichuck Corporation	NA	NA	NA
Philadelphia Suburban Corp.	0.55	5.4	10.8
SJW Corporation	NA	NA	NA
Average	<u>0.60</u>	<u>5.9 %</u>	<u>11.3 %</u>

Proxy Group of Four

Value Line Water Companies

American States Water Co.	0.65	6.4 %	11.8 %
American Water Works Co., Inc.	0.55	5.4	10.8
California Water Service Group	0.65	6.4	11.8
Philadelphia Suburban Corp.	0.55	5.4	10.8
Average	<u>0.60</u>	<u>5.9 %</u>	<u>11.3 %</u>

See page 4 for notes.

United Utility Companies, Inc.
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model

Value Line Adjusted Beta	Company-Specific Risk Premium Based on Market Premium of 9.8% (1)	CAPM Result Including Risk-Free Rate of 5.4% (2)
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Empirical Capital Asset Pricing Model (5)

Proxy Group of Nine
C. A. Turner Water Companies

American States Water Co.	0.65	7.2 %	12.6 %
American Water Works Co., Inc.	0.55	6.5	11.9
Artesian Resources Corp.	NA	NA	NA
California Water Service Group	0.65	7.2	11.8
Connecticut Water Service, Inc.	NA	NA	NA
Middlesex Water Company	NA	NA	NA
Pennichuck Corporation	NA	NA	NA
Philadelphia Suburban Corp.	0.55	6.5	10.8
SJW Corporation	NA	NA	NA
Average	<u>0.60</u>	<u>6.9 %</u>	<u>11.8 %</u>

Proxy Group of Four
Value Line Water Companies

American States Water Co.	0.65	7.2 %	12.6 %
American Water Works Co., Inc.	0.55	6.5	11.9
California Water Service Group	0.65	7.2	12.6
Philadelphia Suburban Corp.	0.55	6.5	11.9
Average	<u>0.60</u>	<u>6.9 %</u>	<u>12.3 %</u>

See page 4 for notes.

United Utility Companies, Inc.
Development of the Market-Required Rate of Return on Common Equity Using
the Capital Asset Pricing Model for
the Proxy Group of Nine C. A. Turner Water Companies and
the Proxy Group of Four Value Line Water Companies
Adjusted to Reflect a Forecasted Risk-Free Rate and Market Return

Notes:

- (1) From the twelve previous month-end (December '00 – November '01), as well as a recently available (December 21, 2001), Value Line Summary & Index, a forecasted 3-5 year total annual market return of 17.1% can be derived by averaging the 12-month, 6-month, 3-month and spot forecasted total 3-5 year total appreciation, converting it into an annual market appreciation and adding the Value Line average forecasted annual dividend yield.

The 3-5 year average total market appreciation of 76% produces a four-year average annual return of 15.18% $((1.76^{25}) - 1)$. When the average annual forecasted dividend yield of 1.93% is added, a total average market return of 17.11%, rounded to 17.1% (1.93% + 15.18%) is derived.

The 12-month, 6-month, 3-month and spot forecasted total market return of 17.1% minus the risk-free rate of 5.4% (developed in Note 2) is 11.7% (17.1% - 5.4%). The Ibbotson Associates calculated market premium of 7.8% for the period 1926-2000 results from a total market return of 13.0% less the average income return on long-term U.S. Government Securities of 5.2% (13.0% - 5.2% = 7.8%). This is then averaged with the 11.9% Value Line market premium resulting in a 9.75%, rounded to 9.8%, market premium. The 9.8% market premium is then multiplied by the beta in column 1 of pages 2 and 3 of this Schedule.

- (2) Average forecast based upon six quarterly estimates of 30-year Treasury Bond yields per the consensus of nearly 50 economists reported in the Blue Chip Financial Forecasts dated December 1, 2001 (see page 7 of Schedule 13). The estimates are detailed below:

	<u>Treasury Bond Yield</u> <u>30-Year</u>
Fourth Quarter 2001	5.2%
First Quarter 2002	5.2
Second Quarter 2002	5.2
Third Quarter 2002	5.4
Fourth Quarter 2002	5.5
First Quarter 2003	5.7
Average	<u>5.4%</u>

- (3) The traditional Capital Asset Pricing Model (CAPM) is applied using the following formula:

$$R_S = R_F + \beta (R_M - R_F)$$

Where R_S = Return rate of common stock
 R_F = Risk Free Rate
 β = Value Line Adjusted Beta
 R_M = Return on the market as a whole

- (4) The empirical CAPM is applied using the following formula:

$$R_S = R_F + .25 (R_M - R_F) + .75 \beta (R_M - R_F)$$

Where R_S = Return rate of common stock
 R_F = Risk-Free Rate
 β = Value Line Adjusted Beta
 R_M = Return on the market as a whole

NA = Not Available

Source of Information: Value Line Summary & Index
Blue Chip Financial Forecasts, December 1, 2001
Value Line Investment Survey, November 2, 2001, Standard Edition
Stocks, Bonds, Bills and Inflation – Valuation Edition 2001 Yearbook Market
Results for 1926-2000 Ibbotson Associates, Inc., Chicago, IL

United Utility Companies, Inc. Comparable Earnings Analysis for a Proxy Group of Forty-Four Non-Utility Companies Comparable to the Proxy Group of Nine C. A. Turner Water Companies and the Proxy Group of Four Value Line Water Companies									
Rate of Return on Net Worth									
Proxy Group of Forty-Four Non-Utility Companies Comparable to the Proxy Group of Nine C. A. Turner Water Companies and the Proxy Group of Four Value Line Water Companies (1)									
Adj. Beta	Unadj. Beta	Residual Standard Error	1996	1997	1998	1999	2000	5-Year Average (2)	5-Year Projected (3)
0.75	0.61	3.5582	15.2 %	19.0 %	12.9 %	12.1 %	1.8 %	12.2 %	13.5 %
0.75	0.61	4.1023	12.7	13.3	13.9	14.0	13.7	13.5	15.0
0.80	0.69	3.3121	14.8	15.2	15.6	15.2	15.3	15.2	13.0
0.70	0.54	3.7906	8.4	9.1	6.9	6.7	6.5	7.5	14.5
0.70	0.48	3.5710	9.1	9.6	8.6	10.8	11.3	9.9	12.5
0.65	0.44	3.3020	10.6	12.7	9.7	12.0	13.5	11.7	10.0
0.80	0.67	3.6073	11.3	9.2	6.8	4.5	4.9	7.3	10.0
0.80	0.66	3.5776	11.4	11.5	5.9	10.0	10.9	9.9	11.0
0.75	0.61	3.4747	19.9	16.4	12.7	13.2	12.7	15.0	11.0
0.75	0.56	3.8745	12.1	12.5	12.9	15.4	15.8	13.7	15.0
0.75	0.58	4.1335	8.5	10.0	12.2	12.3	11.1	10.8	12.5
0.75	0.58	4.1618	10.9	11.9	2.8	5.1	16.7	9.5	16.5
0.75	0.55	3.8260	16.4	16.5	17.2	16.8	16.6	16.7	14.5
0.70	0.48	4.0780	19.5	13.4	12.7	7.2	8.2	12.2	13.0
0.65	0.70	3.5896	3.6	8.9	6.6	7.8	9.6	7.3	9.5
0.75	0.56	3.9796	6.4	3.0	9.7	7.1	2.9	5.8	7.0
0.80	0.62	3.9457	7.0	6.3	4.3	4.7	2.0	4.9	7.0
0.80	0.68	3.8008	5.8	5.8	5.6	5.5	6.0	5.7	6.5
0.65	0.41	3.7496	9.5	15.3	14.2	11.4	16.7	13.4	16.0
0.75	0.59	4.0256	18.2	13.3	12.2	11.6	12.4	13.5	15.0
0.70	0.51	4.1302	14.6	8.5	9.5	12.2	13.5	11.7	15.0
0.75	0.59	4.2325	19.5	7.8	11.6	12.6	14.9	13.3	14.0
0.75	0.56	4.0739	14.1	14.4	15.8	14.8	12.8	14.3	13.5
0.55	0.25	3.7639	13.3	16.1	14.8	13.7	12.6	14.1	13.0
0.55	0.32	3.3590	15.5	15.3	13.6	15.9	16.3	15.3	15.0
0.60	0.33	3.9622	17.4	15.5	14.1	14.1	9.5	14.1	9.5
0.75	0.61	3.7173	16.3	17.5	17.3	16.3	13.0	16.1	11.5
0.80	0.64	3.8206	8.5	11.2	7.6	9.4	9.3	9.2	11.5
0.75	0.58	4.2108	16.5	17.2	16.3	13.6	9.5	14.6	15.0
0.80	0.69	4.1632	10.2	15.5	11.0	14.8	15.9	13.5	16.0
0.80	0.70	4.2512	18.9	15.9	15.0	7.0	19.3	15.2	17.5
0.70	0.53	4.0300	14.9	13.3	10.6	6.9	9.9	11.1	10.0
0.70	0.51	3.3916	15.5	15.9	15.5	12.7	12.2	14.4	14.0
0.50	0.21	4.2555	15.7	15.8	16.4	18.6	18.6	17.0	19.0
0.80	0.66	3.3869	13.4	14.7	14.7	12.7	13.2	13.7	14.0
0.65	0.41	3.5624	11.7	12.3	8.8	9.4	4.6	9.4	11.0
0.65	0.39	3.5888	10.6	12.0	11.6	11.4	13.3	11.8	15.5
0.55	0.31	3.9805	13.9	13.7	11.4	10.3	7.4	11.3	10.5
0.60	0.35	3.6337	12.2	10.0	9.8	13.1	8.9	10.8	9.5
0.55	0.31	3.7386	16.3	18.1	19.3	17.7	16.2	17.9	15.0
0.80	0.69	3.8308	11.0	13.0	12.9	12.5	13.5	12.6	11.0
0.70	0.49	3.7312	9.1	11.4	7.1	5.5	6.3	7.9	11.5
0.85	0.70	3.5564	17.0	15.1	1.6	12.5	14.3	12.1	15.0
0.85	0.70	4.2267	14.8	15.2	13.9	15.6	16.1	15.1	15.0
0.72	0.54	3.8200							
Average for the Non-Utility Group Wendy's Int'l									

Average for the Proxy Group of Nine
C. A. Turner Water Companies and the Proxy
Group of Four Value Line Water Companies

Average - All Companies

Conclusion (6)

See page 2 for notes.

12.1%
12.5% (6)

United Utility Companies, Inc.
Comparable Earnings Analysis

- Notes: (1) The criteria for selection of the proxy group of forty-four non-utility companies was that the non-utility companies be domestic and have a meaningful rate of return on net worth, common equity or partners' capital less than 20.0% for each of the five years ended 2000 or projected 2004 – 2006 as reported in Value Line Investment Survey (Standard Edition). The proxy group of forty-four non-utility companies was selected based upon the proxy group of nine C. A. Turner water companies' and the proxy group of four Value Line water companies' unadjusted beta range of 0.02 - 0.70 and residual standard error of the regression range of 3.4541 – 4.5029. These ranges are based upon plus or minus three standard deviations of the unadjusted beta and standard error of the regression as detailed in Ms. Ahern's accompanying direct testimony. Plus or minus three standard deviations captures 99.73% of the distribution of unadjusted betas and standard errors of the regression.
- (2) Ending 2000.
- (3) 2004-2006.
- (4) The standard deviation of the proxy group of nine C. A. Turner water companies' and the proxy group of four Value Line water companies' unadjusted beta is 0.1127.
- (5) The standard deviation of the proxy group of nine water companies' and four Value Line water companies' residual standard deviation is 0.1748. The standard deviation of the residual standard deviation is calculated as follows:

$$\text{Standard Deviation of the Resid. Std.} = \frac{\text{Residual Standard Deviation}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1748 = \frac{3.9785}{\sqrt{518}} = \frac{3.9785}{22.7596}$$

- (6) Mid-point of the arithmetic mean of the historical five year average and five year projected rate of return on net worth.